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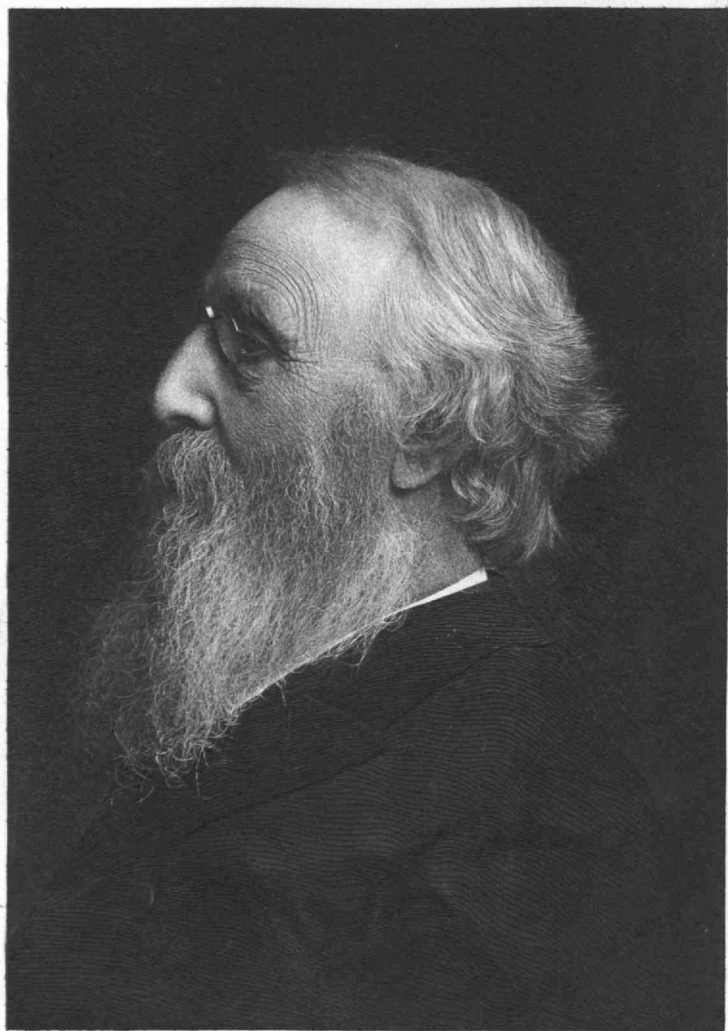
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JOHN DANIEL RUNKLE *

1822-1902

S.B., A.M., Harvard, 1851; Ph.D., Hamilton, 1867; LL.D., Wesleyan, 1871.

Professor of Mathematics, 1865-1902; Acting President, 1868-1870; President, 1870-1878.

John D. Runkle was born at Root, N.Y., and died at Southwest Harbor, Me., near the close of his eightieth year. More than half of his long life was devoted to the creation and upbuilding of the Massachusetts Institute of Technology, of which, next to President Rogers, he was the chief founder. It is a forcible reminder of the brevity of our corporate existence that it dates only from the middle age of our friend who but yesterday was with us. A review of the Institute's life is a review of the later chapters of his own.

As a boy, he led the self-helpful life of the farm, heavily handicapped in the struggle for education, but none the less certain of ultimate success. Not until 1847 did he enter college, the newly established Lawrence Scientific School of Harvard University. His name stands alone in

*The writer of this paper is indebted to the excellent account of Professor Runkle's life contained in the *Technique* of the class of 1901. The effective researches on which it was based make it a valuable contribution to the history of the Institute.

the catalogue of 1848-49 as "student in mathematics." Edward Everett was President; the Faculty of the Scientific School included Eben N. Horsford as Dean, Benjamin Peirce, Louis Agassiz, Asa Gray, Jeffries Wyman, Joseph Lovering, J. W. Webster, and the Bonds. John W. Draper and James E. Oliver were fellow-students; Josiah P. Cooke and William T. Harris, resident graduates. No diploma was offered, but certificates of the number of terms of attendance and of the studies pursued were given. The number and choice of studies were optional. Attendance was voluntary. "The government of the University wish wholly to discourage the resort of young men to the Scientific School who do not possess that stability of character and firmness of purpose which will insure a faithful performance of duty without academic discipline." Runkle was a member of the first graduating class, of 1851, with Joseph Le Conte and David A. Wells. He received the degree of Bachelor of Science, and at the same time, for high scholarship, the honorary degree of Master of Arts. It is interesting that Runkle, after his own graduation, brought two of his four younger brothers to Harvard.

At the middle of the last century, scientific work in the United States was limited alike in scope and in estimation. The colleges—as well as those called universities—naturally included mathematics in their curricula, though only of an elementary sort, ending with a simple treatment of the calculus. The physical and natural sciences, if not excluded, were in general presented as "information courses," with no possibility of adequate appreciation, except in the occasional case of a student of native genius having the good fortune to secure close relations with an inspiring teacher. Astronomy was, in some measure, an exception. As then understood, it had reached a relatively

high degree of completeness, in the sense that its observed phenomena had been mathematically correlated and made the basis of accurate prediction. At the same time the familiarity of these phenomena, the magnificence of some of them, the overwhelming magnitudes of space and time, stimulated the imagination of the educated public, and developed a degree of popular interest shared only in limited measure by the sister science, geology. It is interesting to note that Rogers came to his Institute work in general applied science through geology, as Runkle came through mathematical astronomy.

It is often not appreciated how modern a development is the science of pure mathematics. The boundary line between pure and applied mathematics is indeed—and fortunately—a vague and shifting one. It may be said that the distinction is mainly subjective, corresponding to diverse attitudes and aims of students of the science. Objectively, pure mathematics is a science based on processes of abstract thinking. Applied mathematics is the corresponding quantitative treatment of concrete phenomena. The pure mathematics of to-day is applied to-morrow or the day after. In 1850 the great researches of the European mathematicians of the preceding half-century were little known in this country. Our own scholars of mathematical bent naturally gravitated into mathematical astronomy,—thus Benjamin Peirce and many of his students.

In this connection it may be remarked that in the preface of his treatise on *Analytic Mechanics* in 1855, Peirce states that he has been induced to undertake its publication “at the request of some of my pupils, and especially of my friend, Mr. John D. Runkle.”

The work of computation for the *Nautical Almanac* was carried on at this time in Cambridge by a staff including,

among other men of subsequent eminence, Simon Newcomb, Asaph Hall, George W. Hill, T. H. Safford, and J. M. Van Vleck. Mr. Runkle's connection with the Almanac began in 1849, and continued in some form as late as 1884.

In 1858 Mr. Runkle founded the *Mathematical Monthly* on the basis of replies received in response to the following letter, addressed to many of the most eminent mathematicians and educators in the various parts of the United States :—

NAUTICAL ALMANAC OFFICE, CAMBRIDGE, February 13, 1858.

Dear Sir,—Allow me to call your attention to the following considerations : You are aware, that, while almost every science, as well as art, has its own appropriate journal, around which corresponding interests and tastes cluster, by which special research is encouraged, and through which all the valuable results are communicated to the world, the science of Mathematics is still without its own particular organ.

Now it seems to us that such a journal is needed ; one that shall embrace, among its contributors, the best talent, in order that younger laborers in the same field may always have before them a high standard of excellence, and that it may be a fair index of the mathematical ability of the country. On the other hand, however, care should be taken not to graduate it, as a whole, too high above the average attainments of mathematical students : otherwise, only the few would be interested in it or benefited by it. It should therefore embrace in its pages solutions, demonstrations, and discussions in all branches of the science, as well as in all its various applications.

It should contain notes and queries, notices and reviews of all the principal mathematical works issued in this country as well as in Europe.

In short, it should be the medium of all kinds of information pertaining to the science, to which a large proportion of our mathematical students have at present no ready access.

Such is, in brief, our idea of the character the journal should possess to insure to it the greatest usefulness and most permanent success. . . .

With much esteem,

Yours truly,

J. D. RUNKLE.

Encouragement was received and formal indorsement was given by the American Association for the Advancement of Science and by several educational bodies.

The list of contributors included many distinguished names, among others Arthur Cayley, William Chauvenet, George W. Hill, Simon Newcomb, Benjamin Peirce, John Herschel.

In the "Teaching and History of Mathematics in the United States," Cajori says:—

The time for beginning the publication of a long-lived mathematical journal was not opportune. Three volumes only appeared. On a fly-leaf the editor announced to his subscribers that over one-third of the subscribers to Volume I. discontinued their subscriptions at the close. "I have supposed," he says, "that those who continued their subscription to the second volume would not be so likely to discontinue it to the third volume, and I have made my arrangements accordingly. If, however, any considerable number should discontinue now, it will be subject to very serious loss. . . . I ask as a favor for all to continue to Volume III., and notify me during the year if they intend to discontinue at its close. I shall then know whether to begin the fourth volume. I shall not realize a dollar." This announcement discloses obstacles which all our journals that have been dependent entirely upon their subscribers for financial support have had to encounter, and which none except the more recent could long resist. Moreover, the Civil War was now at hand. On account of the present disturbed state of public affairs the publication of the *Mathematical Monthly* was discontinued.

The foundation of the Massachusetts Institute of Technology, like most notable forward movements, was largely due to the enthusiasm of young men; and the statement does not lose its fundamental significance if it be added at once that youth may designate an attribute of temperament rather than mere fewness of years.

Professor William Barton Rogers came to Boston in 1853, — in his forty-ninth year, — bringing with him not indeed a matured plan for an Institute of Technology, but rather that enthusiasm, insight, breadth of scientific attainment, skill in popular exposition, and fitness for leadership which enabled him to organize success.

He occupied himself in writing and lecturing on scientific subjects, and became the natural leader of a group of enlightened citizens eager for the development of comprehensive plans for educational and scientific institutions in the land then being reclaimed from the tidal waters of the Back Bay. It would be interesting to follow the gradual crystallization of these plans from original relative vagueness into definite symmetry, and incidentally to trace the various influences of acquaintance with foreign institutions on the part of some of the persons co-operating in the general undertaking.

In February, 1859, a meeting was held of "individuals representing Associations of Agriculture, Horticulture, Art, Science, and various Industrial, Educational, and Moral Interests of the State," with a view to memorializing the legislature for a grant of land belonging to the Commonwealth, in aid of a plan for a conservatory of art and science, in line with a recommendation in the annual message of Governor Banks. The plan as elaborated aimed to present scientific information and collections in popular form to a large constituency.

Further progress of this effort up to 1860 is embodied in the "Objects and Plan of an Institute of Technology, including a Society of Arts, a Museum of Arts, and a School of Industrial Science," prepared by Professor Rogers. This exposition was sent to a considerable number of prominent persons, in anticipation of a meeting; and at the meeting a committee of twenty, to which Professor Rogers was added as chairman, was appointed to act generally in behalf of the proposed association, until it should be legally incorporated as the Massachusetts Institute of Technology. Mr. Runkle was a member of this committee, and during the subsequent preliminary steps his name continually recurs. His own review of these developments may be found in an address in memory of President Rogers before the Society of Arts in October, 1882.

In April, 1862, Mr. Runkle, as first Secretary of the Institute, notified Professor Rogers of his election as President of the Massachusetts Institute of Technology, to serve until the first annual meeting, at which time the government for the ensuing year would be elected. At this first annual meeting, Mr. Runkle was elected chairman of the Committee on Publication.

A further development of the embryo school is represented by the "Scope and Plan of the School of Industrial Science," prepared by President Rogers, adopted in May, 1864, and remaining since that time our "intellectual charter."

About this time, President Rogers writes that "with the aid of Professor Runkle and Dr. Watson, a graduate of the *Ponts et Chaussées*, I am framing a course of applied mathematics for our Institute, reaching from the very elements up to the fullest demands of the scientific engineer."

In January, 1865, Runkle writes to Rogers, discussing at

length the organization and plan of the new school, saying of the "Scope and Plan": "I am more than ever delighted with it. I have analyzed it with the greatest care, carrying in imagination students through each of the courses from year to year; and I find it to my mind perfect in all its parts." As to his extended list of professorships he adds: "It might be the best plan to appoint young men who would . . . grow up under your eye and direction." . . . The gradual fulfilment of the great ideal was henceforth his life purpose.

In February, 1865, the President and Professors Runkle and Watson began to meet their classes, the original Faculty including also Professors Storer in Chemistry and Bôcher in French and Mr. W. T. Carlton in Free-hand Drawing.

In October, 1868, the first class having been graduated but a few months before, President Rogers, on whom so much depended, was incapacitated by illness. At that time Professor Runkle was his chief lieutenant, with most cordial personal relations; and his prompt choice as Acting President, in accordance with President Rogers's expressed desire, was thus most natural and fitting. This appointment was held until 1870, a period including the election of Professor Eliot as President of Harvard University, the preparation by Professor Edward Pickering of detailed plans for a physical laboratory, and the failure of an application for State aid. Interesting glimpses of this period are afforded by the "Life and Letters" of President Rogers.

July 4, 1869, Professor Runkle writes to Mrs. Rogers with a foreshadowing of future development:—

Last spring at the Academy I met Commodore Rodgers, and the idea occurred to me that perhaps, in some way, our students in this

department [Mechanical Engineering] might gain admission to the machine shop of the Navy Yard, during their long summer vacations, as volunteers. I suggested the idea to the commodore, who said it would give him the greatest pleasure to issue orders in favor of any students I should send him. Now Mr. Hall and three of our students in Mechanical Engineering are at work in the Yard with every advantage that that great shop can offer them. It virtually gives the Institute, without cost, a shop which it could not supply without a mint of money; and if the students do right, as I know they will, all future classes will have the same opportunity.

. . . But, my dear Mrs. Rogers, do not bring all these things to the attention of the President. They are my sleeping as well as waking thoughts, and I know that however much he might agree and sympathize with me in them, they would be far too exciting. His approbation is all the reward I ask; and at any rate he will always know that in all I do I have but one end, the good of the Institute, in view. . . .

In May, 1870, President Rogers, on account of continued ill-health, finally tendered his resignation of the Presidency, which was reluctantly accepted by the Corporation through a committee under the chairmanship of Dr. Runkle.

On the same day with his resignation, President Rogers wrote from Philadelphia:—

TO THE GOVERNMENT OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY:

Gentlemen,—In retiring from the Presidency of the Institute, I trust you will not deem me presumptuous in recommending Professor Runkle as my successor.

I know of no one who is more thoroughly familiar with the objects and spirit of its organization or who would better carry them out in its development. His faithful services and tried abil-

ity in administering the affairs of the Institute for the last two sessions appear to me eminently to fit him for this position; and, should he be your choice, I shall, in retiring, have the satisfaction of feeling that the Institute is in the charge of one who will bring experience as well as earnest zeal to its advancement. . . .

In the same year, as in a similar later exigency, proposals were received looking toward some connection between the Institute and Harvard University. The negotiations following were difficult, and necessarily involved no little embarrassment and responsibility for the Acting President and his associates. They met both with courage. Professor Runkle was elected President in spite of adverse influences. The integrity and independence of the Institute were preserved.

Dr. Runkle held the Presidency of the Institute from October, 1870, for eight years,—a period momentous for the school, momentous for himself. The situation was a most exacting one, making altogether exceptional demands. The school, only five years old, was in no condition to lose the guidance of its founder. It had not yet gathered the momentum necessary for steady, straightforward progress. Its general direction was indeed determined; but it was a ship sailing seas not well charted, with many chances of shipwreck even without a change of navigator. The new head must have wisdom, courage, sincerity, resolute initiative, but, above all, devoted, self-sacrificing loyalty. Opinions did and will differ as to President Runkle's judgment on the difficult questions that, as time passed, pressed overwhelmingly upon him for solution. No man could have been more devotedly loyal to the school or to its founder, his predecessor and ultimately his successor. None could have shown more steadfast courage, not only against heavy odds, but too often with but feeble support.

Any connected narrative of Dr. Runkle's Presidency would transcend the limits of this paper, but certain salient or significant elements may be noted.

The courses of instruction in 1868 were: Mechanical Engineering, Civil and Topographical Engineering, Chemistry, Geology and Mining, Building and Architecture, Science and Literature, all being identical for the first two years.

In 1878, Metallurgy, Natural History, Physics, and Philosophy had been added.

The Faculty of 1868 included William B. Rogers, Geology; Frank H. Storer, General and Industrial Chemistry; Charles W. Eliot, Analytical Chemistry and Metallurgy; Cyrus M. Warren, Organic Chemistry; William P. Atkinson, English Language and Literature; Ferdinand Bôcher, Modern Languages; John B. Henck, Civil and Topographical Engineering; William Watson, Descriptive Geometry and Mechanical Engineering; William R. Ware, Architecture; George A. Osborne, Astronomy and Navigation; Alfred P. Rockwell, Mining Engineering; Edward C. Pickering, Physics.

In 1878 Storer, Bôcher, and Pickering had followed Eliot to Harvard; Warren, Watson, and Rockwell had also resigned. New members of the Faculty included Samuel Kneeland, Zoölogy and Physiology; John M. Ordway, Metallurgy and Industrial Chemistry; James M. Crafts, Organic Chemistry; Robert H. Richards, Mining Engineering; Thomas Sterry Hunt, Geology; George H. Howison, Logic and the Philosophy of Science; William Ripley Nichols, General Chemistry; Charles P. Otis, Modern Languages; Charles H. Wing, Analytical Chemistry; Alpheus Hyatt, Palæontology; William H. Niles, Physical Geology and Geography; Channing Whitaker, Me-

chanical Engineering; Charles R. Cross, Physics and Descriptive Astronomy; Gaetano Lanza, Theoretical and Applied Mechanics; Henry W. Hubbell, Military Science and Tactics.

In 1868 one class of fourteen members had graduated.

The Rogers Building was just completed, but at a cost crippling the Institute treasury.

By 1878 more than two hundred men had graduated; and most of them were by good work in responsible posts, strengthening the reputation of the school. Two buildings had been added.

The total number of students by years was: 1868, 172; 1869, 206; 1870, 224; 1871, 261; 1872, 348; 1873, 276; 1874, 248; 1875, 255; 1876, 215; 1877, 194. It will be borne in mind that the panic of 1873 caused a general falling off in college attendance. President Runkle was confronted at the outset by the pressure of over-rapid growth, then by discouraging decline.

The more notable events of the Runkle presidency were: the futile negotiations, already referred to, with Harvard University for a union; the establishment of the laboratories of mining engineering and metallurgy; the introduction of shop instruction and the foundation of the School of Mechanic Arts; the development of professional summer schools in the field; the beginnings of an engineering laboratory; the increased efficiency of military instruction and the summer encampment at Philadelphia in 1876; the erection of a gymnasium, including a lunch-room; the admission of women as students.

The printed records for this period, 1871-1877, are particularly complete, the President's Reports including also extended departmental reports; and from these in their order the following notes are mainly taken. Some of the

expressions, now time-honored, have in their original context a surprising freshness in the obvious novelty of the ideas presented.

In 1872 announcement is made of the first field excursion for students in Civil Engineering, with the statement, "We hope to do this summer for bridge construction what was done in the last for Mining Engineering and Metallurgy."

In the previous year, President Runkle had conducted an expedition to Colorado and Utah for the observation of mines and mining processes. The party consisted of five professors and fifteen students. Much valuable information and important contributions of ore were received.

It was during this excursion, while observing the wrecks of fortunes strown all over the territories, that the thought occurred to us that much of this waste was due to a want of practical skill joined with scientific knowledge, and that the opportunity for experimenting upon comparatively large quantities of ores must be furnished to our students during their course, as a part of their laboratory work. After disbanding the party I visited San Francisco, and had the good fortune to make the acquaintance of some skilful practical metallurgists, who were making the examination of ores a specialty, and had built up laboratories for ore-dressing, on about the scale we needed. But the processes were detached, and no attempt was made to represent the best forms and kinds of machinery in use at that time in California for the reduction of gold and silver ores. . . .

The furnaces in the Metallurgical laboratory were designed by Professor Ordway and built under his direction, while the Mining laboratory has reached its present state of progress almost entirely through the ability, practical skill, and untiring energy of Professor Richards. Thus, what was a conviction has become a practical reality.

Announcement is made of the intention of Mr. John

Amory Lowell, trustee of the Lowell Institute, to establish courses of instruction in Designing, as applied to the Industrial Arts.

It is stated that, if the new class is likely to exceed one hundred, it will involve the necessity of considering the erection of a new building. This first President's Report closes with a brief statement of the resources of the Institute up to that time, showing cash gifts received to the amount of nearly \$600,000, the chief benefactors being William J. Walker and Ralph Huntington. The name of the former was given to the professorship afterwards held by Dr. Runkle, that of the latter to the "great hall" of the Rogers Building.

In June, 1871, it had been

Voted, That the Corporation will hereafter confer the degree of Bachelor of Science in the department of ———, instead of graduate of the Massachusetts Institute of Technology in the department of ———, as heretofore.

To establish advanced courses of study, and to confer the degree of Doctor of Science.

In the departmental reports of 1872 it is stated that the chemical laboratory covered 4,000 square feet; the mining laboratories, 2,000 square feet; the physical laboratory, 3,500; and the drawing-rooms, 8,500. (The present chemical laboratories occupy some 30,000 square feet.)

The Report for 1873 mentions the success of an application to the legislature for additional land* on the Back Bay, and the more complete equipment of the mining and metallurgical laboratories. The preliminary announcement of the Lowell School of Design is quoted, and reference is made to the appointment of Lieutenant Zalinski, and of

* A trapezoidal lot at the junction of Boylston Street and Huntington Avenue.

Professor Whitaker as Professor Watson's successor as head of the Department of Mechanical Engineering. The President states that he has "asked Professor Whitaker to suggest such a laboratory as will best aid in the education of mechanical engineers, and particularly in the solution of those experimental problems which lie at the foundation of all safe theory or practice." He expresses the earnest wish that the Corporation will authorize the establishment of this laboratory at as early a day as possible. The expectation is stated that the elements of mechanical and free-hand drawing may be required for admission at a time not far distant.

The statistics for these years indicate a notably high proportion of Massachusetts students, usually about five-sixths of the whole.

In December, 1872, solid geometry and the rudiments of French were added to the requirements for admission, and the fee was advanced to \$200 a year. The use of the large hall was granted to Trinity Church for a place of worship.

As to English, Professor Atkinson's successive reports are interesting and instructive. For example, in 1873 he says what is in great measure true in 1902 :—

Practically a large majority of our regular students have to crowd four-and-a-half to five years' mathematical and scientific work into four years; and this leaves but a small amount of mental energy to be devoted to studies not strictly professional. There is one, and only one remedy for this difficulty, and that is a better preparation; and that not more, or even so much in English and mathematical as in elementary scientific study. In consequence of the very defective condition of school instruction in science in this country, our students have practically to begin the study of the very rudiments of physics, chemistry and the different

branches of natural history at the age of sixteen or seventeen, a period of life at which, if our schools were perfectly organized, these elements would all have been acquired.

Lieutenant Zalinski's report of the same year contains an urgent recommendation for the construction of a drill-hall and gymnasium, and refers to the beneficial effect of the trial of a student by a court-martial composed of his fellow-students for "disobedience of orders" and for "conduct unbecoming a gentleman."

In 1873 the attendance of students declined sharply, in consequence of the occurrence of a general financial crisis at the same time with advances in the tuition fee and in entrance requirements. Nevertheless, the Report for 1874 does not fail to reiterate the need of additional space and of the development of new lines of work. Announcement is made of the differentiation of courses at the beginning of the second year, and of the establishment of new courses in metallurgy, in physics, and in philosophy. It is stated that graduates have for the first time been able to present their theses before the final examinations—instead of at some indefinite later date. Undeterred by diminished numbers, the President urges the further advance of entrance requirements to include more algebra, and plane and spherical trigonometry, and emphasizes the need of laboratory instruction in elementary chemistry in every secondary school. As to English,—

An occasional exercise in composition is not sufficient. An exercise in writing, in some form or other, should be the one never to be omitted for a single day, until, first, accuracy, and second, facility of expression have been acquired.

The erection is reported of

an excellent building, 155 feet long by 50 feet in width, and one story in height, covered with corrugated iron and a slated roof, containing a light and well ventilated drill-hall, with ample space for gun-racks, wardrobes for uniforms, and boxes for those who use the gymnasium.

Where the health of one student is injured simply by over study, the health of many is injured by want of exercise, or other preventable causes, while over study is usually the only cause assigned. It is true that each class hears an excellent course of lectures on Physiology and Hygiene, but it is to be feared that too few make a personal application of what is taught them, and thus fail to gain what this instruction is mainly intended to impart. I am deeply impressed with the conviction that a radical change in this department is necessary, and that the laboratory system is quite as important in this as in other departments of the school. To make the instruction of the greatest value to each student it must be applied practically in each case; and while I am not now prepared to advocate a compulsory system of gymnastics, I am satisfied that incalculable good would come from a more personal application of the instruction, with opportunities for systematic exercise, under the direction, not of a mere gymnast, but of a physician who had made this application a matter of special study. If our students lived in dormitories, as at most colleges, or so near each other that their spare time could be spent in out-door athletic sports, the case would be somewhat different; but there is probably hardly another school in the country where the students are so thoroughly scattered, and such exercise had, if at all, at so great disadvantage.

Our only remedy therefore, in addition to what is offered by the drill to only a portion of our students, is a gymnasium.

We have also availed ourselves of the opportunity which the drill-hall has afforded us to establish, by way of experiment, a *lunch-room*, where professors and students and

their friends can get a well-cooked and well-served dinner or lunch, as desired, at a very reasonable cost; so reasonable as to induce those who have depended upon a cold lunch to do so no longer.

In these improvements, President Runkle depended much on the energy and zeal of Lieutenant Zalinski. The analogy of all this wise solicitude for the welfare of students is singularly prophetic of our present days, when realization seems not distant. It is not strange that the Walker Memorial has enlisted the warmest interest of Professor Runkle and Captain Zalinski.

In the same year a beginning had been made of an engineering laboratory. Professor Nichols's report refers to certain chemical investigations in the service of the State which have since had so notable a development.

The Report for 1875 contains for the first time a list of the 126 alumni with present residence and occupation, "furnishing the best evidence of the estimation in which the work of the school is held by the public."

The Report for 1876 is largely occupied with matters connected with the Centennial Exhibition at Philadelphia, in particular the Institute encampment and the exhibit of the Russian system of workshop instruction. Of the former, Lieutenant Zalinski's report gives an extended account. The party started June 8, numbering more than 370,— "Corporation, Faculty, graduates, former students, students and friends of members of the Institute," — with a few ladies. The University of Pennsylvania had granted the use of its campus for Camp W. B. Rogers, the State of Massachusetts loaned the necessary camping outfit, and many courtesies were extended by residents of Philadelphia.

In establishing regulations for, and enforcing the discipline of the camp, it was the aim to have the minimum re-

striction and military work consistent with maintaining good order and securing the proper sanitary conditions necessary for the health and comfort of all. . . . The conduct of the students was exceptionally good and the subject of general commendation.

The party returned to Boston June 23.

President Runkle says,—

The organization which had been found necessary for properly carrying on the instruction of the department, was found sufficient to maintain order and cohesion in a much larger body, and the Institute, as well as all the members of the party, owe a debt of gratitude to Lieutenant Zalinski for the energy and efficiency with which the whole affair was conducted.

A great quantity of material was collected at the close of the exhibition as the nucleus for the Industrial Museum included in the original plan of the Institute.

The most important result of President Runkle's visit to Philadelphia was his quick and enthusiastic appreciation of the exhibit of Russian methods of shop instruction, and of their potential advantage to the Institute in particular, and to American education in general. Within present limits the course of events can only be briefly indicated. In a special communication to the Corporation of the Institute, after recalling the experience in laboratory instruction of the Institute and other colleges, he says:—

We went to Philadelphia, therefore, earnestly seeking for light in this as well as in all other directions, and this special report is now made to ask your attention to a fundamental, and, as I think, complete solution of this most important problem of practical mechanism for engineers. The question is simply this—Can a system of shop-work instruction be devised of sufficient range and

quality, which will not consume more time than ought to be spared from the indispensable studies?

This question has been answered triumphantly in the affirmative, and the answer comes from Russia.

In all constructions a certain limited number of typical forms are found, these forms being more or less modified, to adapt them to special constructions. These forms will also fall into groups each to be worked out in a certain way and with special tools. If, then, the student can be taught to work out these forms, each in the best way, and with the tools best adapted to the work, he will be far advanced in the skill which will make him available and useful in construction. The ideas involved in the system are, first, to entirely separate the *instruction* shops from the *construction* shops; second, to do each kind of work in its own shop; third, to equip each shop with as many places and sets of tools, and thus accommodate as many pupils as a teacher can instruct at the same time; and, fourth, to graduate the samples to be made in each shop according to some scale, that of difficulty being probably the best in practice. In short, in these preliminary instruction shops the *arts*, which find their applications in construction, are systematically taught.

In the light of the experience which Russia brings us, not only in the form of a proposed system, but proved by several years of experience in more than a single school, it seems to me that the duty of the Institute is plain. We should, without delay, complete our course in Mechanical Engineering by adding a series of instruction shops, which I earnestly recommend. The whole matter turns upon getting the proper rooms. It is already clear that there are no other difficulties which cannot readily be surmounted.

The special report includes also the recommendation of the establishment of a two years' course in practical mechanism, which was afterwards carried out in the School of Mechanic Arts.

In August, 1876, the Corporation authorized the erection of a temporary building for shopwork and advanced chemistry, covering 7,500 square feet. The funds required were contributed in part by the Massachusetts Charitable Mechanic Association, in part by the Women's Educational Association with a view to securing opportunities for women students. The Russian government authorized the duplication of its Philadelphia exhibit for the Institute. The material was received the next year, and the following votes passed by the Corporation:—

Resolved, That the Corporation of the Massachusetts Institute of Technology takes this opportunity to cordially congratulate His Imperial Highness, Prince Pierre d'Oldenbourg, that, at the Imperial Technical School of Moscow, education in the Mechanic Arts has been for the first time based upon philosophical and purely educational grounds, fully justifying for it the title of the "Russian system."

Resolved, That this Corporation hereby tenders its grateful thanks to His Imperial Highness for his most valuable gift, with the assurance that these models will be of the greatest aid in promoting Mechanic Art education not only in the school of this Institute, but in all similar schools throughout the United States.

The Report includes a review of much interest by Professor Pickering of his ten years' work in the Department of Physics, concluding:—

I cannot close this report without an acknowledgment of the aid I have received from you, Mr. President, in bringing our Laboratory into its present state of efficiency. Your confidence in its success from the very beginning, your encouragement and enthusiasm regarding its extension, and the interest you have shown in every detail, have helped, more than we have realized, to such success as we have attained. . . .

With hopes that the next decade may witness as great advances as that which is just completed, I remain,

Very respectfully yours,

EDWARD C. PICKERING,

Thayer Professor of Physics.

The final Report (1877) contains an interesting analysis of student registration for the thirteen years. The proportion of special students was far larger than now, amounting in the final year to nearly 60 per cent. The proportion of the number of graduates to the number in the corresponding entering class varied after the first year from 16 per cent. to 47 per cent. The entering classes showed great fluctuations, the figures for the years 1872-76 being 115, 68, 36, 66, 36.

The Report concludes:—

In conclusion, I will say that as a whole the school has never been in a state of higher efficiency than at the present time. Our great and pressing need is additional funds; and without immediate relief, we must either discontinue some of the departments, or cut down the salaries already too small, or more probably both. The fee for those taking the full course is \$200 per annum, and it is clearly out of the question to think of increasing the income by raising the tuition. It is even now far beyond the means of many deserving students.

The value of the Institute as an agency in developing and diversifying the industries of the State can only be maintained by increasing its funds. I cannot think that the large sums which have already been contributed toward the establishment of our school, and particularly the large educational facilities and experience gathered together, shall be allowed to fail of the highest results for the want of additional means.

This proved to be a valedictory.

The severe financial difficulties of the Institute are but dimly reflected in these Reports. As early as 1874 President Runkle writes Professor Rogers of the Corporation's earnest wish to reduce expenses ; and questions of this kind continued to prove painfully insistent as years passed and attendance and resources diminished, or increased but meagrely. If the President's optimism helped him to endure the strain, it did not relieve him from most embarrassing consequences, and must at times have made it difficult if not impossible for him to avoid arousing expectations only too certain to be ultimately disappointed. In October, 1877, he writes to Professor Rogers : —

For the present year a reduction of salaries will be imperative ; and it will also be equally imperative for us to reduce our teaching expenses for the future by consolidating professorships and putting the work in fewer hands. It is this or bankruptcy, if we do not get at once from some source a large increase of our invested funds. . . . I am not at all discouraged as to the future of the Institute, but I do deeply feel for all who must suffer for the Institute's sake.

In the spring of 1878 an appeal for State aid was refused. May 31 the President communicated to Professor Rogers his intention to resign his office, and a week later addressed the following letter to the Corporation : —

BOSTON, June 7, 1878.

Gentlemen,—I have had the honor of serving the Institute of Technology as President of this Corporation for the past ten years.

The time has come when I feel it my duty to resign this office, which I now respectfully beg to do, my resignation to take effect at the close of the present year.

I intend to remain a member of the Corporation, and wish to retain the professorship with which you honored me at the opening of the school.

In resigning the Presidency, I wish to express my grateful thanks for the opportunity you have given me to identify myself in some small degree with the well-earned fame which the Institute enjoys in maintaining one of the leading, if not the leading technical school in this country. If permitted to retain my connection with the Institute, my earnest wish is that I may be able to serve it more efficiently in the future than I have been able to do in the past.

Again, thanking you for the cordial support you have always given me in all educational measures, I ask you now to accept my resignation without ceremony and without delay.

Very respectfully,

Your obedient servant,

J. D. RUNKLE.

On the same day Professor Rogers wrote to the Corporation : —

Gentlemen,— As it is out of my power to be with you to-day, and as I understand from President Runkle that he wishes his resignation to be accepted without delay, I beg to say to you that I cannot let him relinquish the position which he has filled so long and so disinterestedly without expressing my sense of the great value of his services to the Institute. Few persons know the labours and perplexities which have been involved in carrying forward the plan of the Institute to its present widely expanded activity, but all who have marked its progress will, I am sure, agree with me in a most grateful recognition of the unflagging devotion to its welfare which President Runkle has always shown, and will be assured that his zealous and disinterested labours as President of the Institute must always have an honoured place in its history.

Believe me, yours faithfully,

WILLIAM B. ROGERS.

Dr. Runkle was granted a year's leave of absence, afterwards extended to two. Professor Rogers accepted reelection, pending the appointment of another President, on

condition that the Corporation raise \$100,000 to add to the funds of the Institute. July 13 he wrote to Professor Runkle:—

... And now, dear friend, with a full heart I must bid you good-by. We have known each other and have worked together so long, and, may I not say, so affectionately, that any professions of regard from me would be out of place. I can only say, in parting with you for a time, that I shall think of you with the old regard, wishing for you all the rest and the enjoyment which you have so richly earned by your untiring labours, and hoping that, after a not too protracted stay abroad, you may come back to your friends with renewed health, and with undiminished, if not augmented zeal, in the educational work to which you have devoted yourself.

Yours faithfully,

WILLIAM B. ROGERS.

In 1880, Dr. Runkle returned with renewed health and strength. His storm-and-stress period was ended, and two fruitful years in Europe had now intervened. Still young at fifty-eight, he was to enjoy a delightful home life with the care and education of his young children, useful and honored citizenship in a suburban town, year after year of inspiring teaching, leadership in the broadening of secondary education along the lines he had earnestly followed since 1876.

Discussions of priority are seldom profitable, and are often at fault for lack of accurate definition. In the present instance no question of origination is involved. It had been President Runkle's merit to be the first to appreciate the American need of mechanic arts instruction based on principles already successfully applied in Russia. He was primarily interested in it as an invaluable addition to existing engineering courses, but he also saw clearly its great

potential significance for general secondary education, and so far as possible under pressure of other needs, demonstrated this by the inauguration of the School of Mechanic Arts, already referred to, in which boys of high-school age were offered a two years' course, including mathematics, English, French, history, mechanical and free-hand drawing, and shopwork. His visit to Europe enabled him to make a study of Continental schools of similar purpose; and the results of this study are embodied in a paper presented to the Society of Arts in April, 1881, on "Technical and Industrial Education Abroad," in an extended contribution to the Report of the Massachusetts Board of Education for 1880-81, and in a "Report on Industrial Education" in 1884. His matured convictions of the latter date are embodied in the following resolutions:—

First. The single aim of our public education should be the physical, mental, and moral training of the young, by all suitable means and agencies; and no study or discipline which is not adapted to these ends for all pupils should be introduced into our public schools and supported at the public expense.

Second. While the training of the mental faculties must always be the first and distinct aim of all education, still this training is most effective when all the senses are most fully brought into play as factors in the general process.

Third. We believe that hand instruction, no matter of what kind, if adapted to the age of the pupil and properly conducted, can be made disciplinary, and a valuable adjunct to the purely literary studies.

Fourth. We believe that a hand study, requiring not more on the average than one hour per day, can be introduced into our public schools without impairing the educational value of the studies now taught, and with no abridgment of the time now devoted to them which will not come through better methods of teaching, or on other grounds.

Fifth. We believe that a workshop, as part of the apparatus of a public school, is as desirable as a science laboratory is to the technical school or college.

Sixth. It is the deliberate opinion of this Association that the time has come when hand work should be taught to the proper extent in all our public schools, both because of its educational value, and because the social and industrial conditions have so changed as to make such teaching necessary.

Others have taken a more directly prominent share in the introduction and extension of mechanic arts or manual training in primary and secondary schools, but the actual experiment initiated by President Runkle in Boston had in its time wide influence and imitation. In Brookline, Dr. Runkle was long an active member of the school committee, and a modern school-house bears his name.

As a teacher of mathematics, Professor Runkle found his highest usefulness and most congenial vocation,—a vocation to be happily continued for not less than twenty-one years. The present writer may be permitted to recall the beginnings of an acquaintance which he has had the good fortune to enjoy from the beginning of this period. He remembers as from yesterday the (to his immature view) venerable but robust figure, the somewhat straggling locks of gray with a tawny tinge, the stimulating, luminous, unconventional exposition, the quick, incisive questioning, the surprising blackboard drawing, the inimitable touches of the confidential or the monitory, the constant substratum of uplifting earnestness and dignity. None of his students could fail to acquire admiring affection: very few could withstand the incentive to work. Which of them will not recall such characteristic expressions as this, “Now, gentlemen, I am going to show you one of the most beautiful and interesting things you ever came across”?

In 1880, Professors Runkle and Osborne were the entire mathematical staff, and nearly every student came in contact with both. As years have passed, this has greatly changed; and in recent times only a fraction of the students in calculus have met in 22 Rogers. Professor Runkle's place in the affections of the alumni has been none the less secure, and to no representative of the school have they extended more cordial invitations or more enthusiastic greetings. As a teacher, Dr. Runkle maintained his interest and zeal in a remarkable degree. In the class-room he renewed his youth. His teaching became the most vital part of his life. Until the summer of 1901 he had done full work. In the fall, feeling somewhat doubtful of his strength, he was relieved at his own request. An opportunity arising for substitute work, he was more than willing to fill it, even expressing the idea that he had made a mistake in giving up. But his earlier judgment had been well founded. His strength soon proved unequal to the task, and he was afterwards able to be at the Institute but rarely.

As a member of the Corporation and the Faculty,—and either position may prove easily embarrassing for an ex-President,—Dr. Runkle's position has been unique and his relations with his colleagues during these twenty-one years have been most fortunate. Always ready and glad to place his own experience and best judgment unreservedly at the service of his associates, his attitude has never been critical, even in implication. He frequently presided at Faculty meetings, and was long a member of the Faculty Committee on Scholarships,—a place in keeping with his unceasing interest in student welfare.

As senior member of the mathematical staff, his relations with his younger associates have been not merely friendly,

but almost paternal. In the early years the department had been too small to need formal organization. After it became larger, he was disposed to leave much initiative to his juniors; and any progressive tendencies of theirs never failed to receive his prompt appreciation and encouragement. He expressed his interest in the department by donating to it his own valuable collection, and was not a little pleased at the action of the Corporation in giving to the enlarged library his own name.

Near the end of the past school year the following letter was addressed to Professor Runkle by his colleagues of the Faculty:—

MASSACHUSETTS INSTITUTE OF TECHNOLOGY,
Boston, May 31, 1902.

Dear Professor Runkle,—In recognition of your recent appointment as professor emeritus, we desire as your colleagues in the Faculty of the Massachusetts Institute of Technology to tender an expression of our high regard.

We remember with grateful appreciation your eminent services to the Institute from its foundation, and your warm personal interest in your students and your associates.

We trust that it may be agreeable to you, at such time as you may prefer, to give us the great pleasure of meeting us at a dinner at the Technology Club.

This pleasure was unfortunately not to be realized.

Professor Runkle was a man of much intellectual quickness and strength, of ardent, but in later years serene, temperament, of warm and generous affections, of cordial unaffected courtesy, in all the relations of life a sincere and loyal gentleman. Throughout his early and middle life he was a pioneer, first in the struggle for his own education and that of his brothers, next in the establishment and continuance of a much-needed but, as it turned out, premature

mathematical journal, then and for many years in the development of the Massachusetts Institute of Technology, and the introduction of education in the mechanic arts. In all these undertakings his insight and courage were invaluable. He made President Rogers' plans for the Institute his own. He held steadfastly to its fundamental ideals, and, taking account of his scanty resources, made remarkable progress toward their fulfilment. The main changes he initiated have been abundantly justified by time, and he lived to see their fulfilment.

His students have been his lifelong friends, and some have had the good fortune to renew the friendship through their sons. In his declining years he has enjoyed the abundant fruition of many hopes. He has been able to continue the work he loved nearly to the end, which has come as we may believe he would have chosen. His name and memory are now added to those traditions which constitute what is permanent in the Institute of Technology.

H. W. TYLER, '84.

SHALL THE INSTITUTE REMOVE FROM ITS PRESENT SITE?

By an unexpected combination of circumstances the Institute of Technology is called upon to face, as a question demanding an unqualified answer, the problem of its future location. For a number of years, as the retail trade of the city has advanced up Boylston Street, Institute men have said to one another that at some time the possibility of leaving Copley Square for a region less harassed by electric cars and the tumult of business must be considered. Within a few months, however, the vague future has been transformed into the imperative present; and the authorities, before the beginning of another year, must settle this momentous question, the most difficult and perplexing, the most fully fraught with possible good or ill, that has presented itself for many years.

The causes necessitating this immediate decision are many. Chief among them are: (1) The impending erection of two large buildings,—that for electrical engineering and that for the Walker Memorial,—which it would be unwise to put on Trinity Place, if the Institute is to be removed from its present location within twenty-five years. (2) The encroachment of retail business upon the Copley Square region, which will probably be greatly accelerated by the opening of the land formerly occupied by the Providence Railroad. (3) The very great advance in the price of real estate, making the purchase of more land adjoining the present property of the Institute almost out of the question. Too much of the Institute's capital is already locked up in land. To make further investments therein would seriously impair its growth and usefulness. (4) The sale of the Museum of Fine Arts property to a syndicate, which will doubtless erect upon that land buildings of considerable height occupying the entire area. (5) The great

increase in street noises, making it hard to conduct recitations and producing distinct nervous strain in teachers and students; and the probable equipment, in the near future, of the Boston and Albany Railroad with electrical power. This jar from traffic and this electrical disturbance already make delicate work of certain kinds difficult or impossible.

(6) The pressing dormitory question. If a dormitory system were to be inaugurated, financial considerations would force the location of the buildings at some distance from the present site of the Institute; and it would then be doubtful if many students would care to avail themselves of the dormitories, since they could still live in reasonable comfort in boarding-houses situated within easy walking distance of Copley Square.

In a problem of such gravity and presenting such a variety of aspects the opinions of the alumni of the Institute are of the highest importance, and should be fully given. The President and Corporation earnestly invite the fullest expression of views, and they will welcome all communications on the subject. The essential thing is to secure immediately the completest discussion of the matter and the widest consideration of its many aspects. A change so far-reaching in its results should not and will not be made until it has been looked at from every point of view and unless it has secured a substantial weight of opinion in its favor. To stimulate discussion, the REVIEW ventures to set forth impartially the principal points in favor of and against the removal of the Institute from its present site, giving first the arguments against such removal.

(1) An argument which might prove insuperable is that the land occupied by the Rogers and the Walker Buildings cannot be sold without permission of the General Court. This land was originally granted in reversion; that is, with the provision that it should belong to the Institute only so long as that college occupies it for educational purposes. It is not believed that serious obstacles would arise to prevent the removal of this restriction; but to get any measure through the legislature requires much

effort. Definitive action could not be secured before next spring; and there are certain interests, of course, which would endeavor to prevent any change in the character of the square bounded by Boylston, Newbury, Berkeley, and Clarendon Streets. Indeed, only a few years ago, when this was a residential district, it would have been practically impossible to have secured the removal of the restriction; but, now that this region is rapidly succumbing to the demands of business, it seems reasonable to believe that property owners would welcome rather than oppose the placing of this valuable block of land unrestrictedly upon the market.

(2) The important question of sentiment. The work, struggles, successes, failures, and triumphs of forty years, the undergraduate memories, the affection and gratitude of thousands so cluster around the Rogers Building and its familiar vicinity that to move the college to another spot means a painful shock to an immense number of its friends, and a distinct loss in their interest and in the other intangible but powerful forces which have their roots in deep-founded sentiment and association.

(3) The loss involved in the giving up of a location which now makes the Institute, through its public lectures and scientific gatherings, a focal point for the educational and intellectual life of the city. It is also a convenient centre for the alumni themselves, who, coming from every part of the country and of the world, now find it easy to keep in touch with the life and work of the Institute. Moreover, it attracts the attention of the general public to its work by reason of its prominent situation. This focal character of the Institute is one which is very rapidly developing, and which is of immense service to the Institute itself, to the community, and to the alumni. To check this growth, or even to interrupt it, would involve serious loss.

(4) The separation of the Institute from the important mercantile and professional interests of the city which are so dependent upon it, and upon which it, in turn, must

always rely, not only for financial support, but also for educational stimulus. An important element in the success of the Institute has been, of course, its situation in the midst of a city containing so large a proportion of broad-minded and progressive manufacturers, merchants, and engineers. To get too far out of touch with them and with the vast interests which they control might seriously diminish the prosperity and vitality of the Institute. A cognate disadvantage would be the separation of the college from the Public Library, the Art Museum, the Natural History Building, and the other auxiliary educational agencies which have always so cordially co-operated with the Corporation and Faculty in furthering the sound education of the young men under their charge.

(5) The loss of time and the additional expense to many students of the Institute who now live at home involved in a removal from the centre of the city. A large percentage of those homes are at least five miles from the present location of the Institute. To go back and forth from the college, were it removed from its central position to a more or less distant suburb, would mean increased expense and inconvenience to many, especially to those young men who live upon the side of the city opposite to that selected for the new location.

(6) The problem of housing those students who come to the Institute from a distance. The proportion of such young men is over 40 per cent.; and they have heretofore been easily, if not always satisfactorily, taken care of in numerous boarding-houses, or in chapter houses of the various societies, located within easy reach of Copley Square. To remove the Institute out of town would almost inevitably mean the establishment of college dormitories; and this would bring about many new responsibilities and complications in its government.

(7) The delay in providing urgently needed accommodation for the increasing numbers of students at the Institute. The removal of the college would mean, of necessity, a delay of at least three years in meeting properly and

permanently the pressing requirements of the Institute for more room, especially for adequate laboratories in physics and in chemistry. This objection can be partly met, however, by the erection of temporary structures sufficiently good for three or four years, and containing all the apparatus that would be placed in permanent buildings.

These, then, seem to be the seven main disadvantages resulting from a removal of the Institute from Copley Square to some region more distant from the city's centre:—

1. The labor and controversy of an appeal to the General Court.
2. A loss of the moral support due to sentiment.
3. The giving up, at least to a considerable degree, of its pre-eminence as the educational focus of Boston.
4. At least a partial separation of the Institute from those industrial and mercantile interests which have been its main support, and from certain other educational agencies.
5. Inconvenience of access, causing loss of time and increased expenditure on the part of the students.
6. The many complications which must arise from the establishment of the dormitory system.
7. An increased delay in providing much-needed new buildings.

Dealing now with the probable advantages of removal to a location more or less distant from the city's centre, let us take up first those which, to a greater or less degree, offset these seven disadvantages.

(1) The public attention and interest which would follow a movement so conspicuous and involving so much discussion as would the sale of the Institute's property. An action so radical as this, and permitting of the readjustment of the Institute upon so large a scale, would appeal to the public powerfully, and might well result in the receipt of large gifts toward the erection of new buildings or the better equipment of the several departments, and in a wider recognition of the work of the Institute on the part of those seeking a higher education.

(2) While there would be, undoubtedly, distinct loss through the destruction of the sentiment which forms, as it were, a halo about the present region, there might well grow up around a new and wholly suitable location a new affection, sentiment, and depth of association that would be far stronger than any now existing. Were the Institute to remove, it would of course secure a large tract of land, and would erect buildings designed upon a definite and ample plan and grouped, presumably, around a central campus. Such a group of buildings, architecturally fine, artistically placed, and possessing the accessories of green-sward, trees, and other essentials of landscape architecture, would inevitably — especially if associated with dormitory life — create in the minds of future students a lasting picture and a loving memory far stronger than any which it is possible to develop with our scattered and generally ugly buildings, seated in what will soon be the noisiest part of Boston. Between the destruction of the old associations and the creation of these new ones there must, of course, be an interregnum; and with the graduates of the first forty years no new feeling of association can replace the attachment which they will always feel for "Old Rogers." This interregnum will be a dangerous and difficult time for the Institute; but, if it is ever to occur, it is better that it should come now than later.

(3) To offset the third objection, there seems to be no corresponding advantage. The Institute holds in Boston a place that it seemingly could not maintain outside the city. That moving involves a lessening, and possibly a loss, of this position is one of the most serious objections to the proposition, one that should be most fully and carefully weighed before a final decision is reached.

(4 and 5) To the fourth and fifth objections there are no offsetting advantages: though it is true that any location likely to be chosen would be as near the centre of business life to-day as was the Rogers Building in 1865; and transportation facilities have improved wonderfully during the last thirty-five years. To-day scarcely any location in the

southern suburbs of the city, for example, could be more difficult of access from the towns on the north than was the Rogers Building even up to the time of the opening of the subway. Moreover, on whichever side of the city the Institute might be located, the access for students living in that quarter would be improved in just the same measure that it would be made more difficult for young men coming from the opposite quarter.

(6) As to the question of housing the students, it is more and more impressing itself upon the authorities that they must assume a larger degree of responsibility in the social life of the young men who come to the Institute. To do this in its present location is well-nigh impossible, as no supervision of boarding-houses or of society houses is practicable, and the building of dormitories in the vicinity of Boylston Street would be, in view of the high price of land, almost out of the question. The solution of this special problem of Institute life has already been tentatively begun by the purchase of a tract of twelve acres in Brookline. On this it is proposed to establish a student colony, where Institute skill and Institute energy will be invoked to create co-operative living conditions so admirable that, as President Pritchett has aptly expressed it, "the man with the most money will like to go there; and the man with the least cannot afford to go anywhere else." The success of this plan, however, is problematical, so long as the newly acquired land is far separated from the teaching buildings of the Institute, since it is uncertain whether or not the students will care to live at such a distance from the college. If, then, the dormitory system is to be adopted as a general policy by the Institute, it may prove imperative for the Institute to remove into the suburbs, toward a region in which land is cheap enough to admit of its use for student houses.

(7) The planning of buildings and of laboratories fitted exactly to meet the present needs of instruction and the increasing demands of pure and applied science. The Rogers Building, dignified as it is, has long been ill-adapted

for many of the purposes for which it has to be used. From an architectural standpoint, especially, the bodily removal of the Institute would give a chance for that dignity, that adaptation of style to service, that harmony among the buildings, which can never be possible in the present location.

There are, in addition, intrinsic advantages in moving which are among the strongest that can be urged. Some of these are:—

(1) The quiet and freedom from disturbances, electrical and mechanical, which would result from getting away from electric cars and city streets. As has already been stated, the present conditions are very trying, and are growing worse every year. Moreover, there seems much reason to believe that sooner or later they will become intolerable, and will absolutely compel a change of location. Were this belief a certainty, there would be no question of the wisdom of removal, since, if the Institute must go, it is undoubtedly better that it should go now than fifteen years hence; but, as the future of Copley Square is uncertain, the wisdom of the suggested step is also problematical, and demands the most careful weighing of *pros* and *cons*, and the clearest prevision of probable future conditions.

(2) The obvious advantages of being able to build a new and modern set of buildings adapted to specific needs, provided with an abundance of light and air, and grouped upon some definite, dignified scheme, have already been mentioned. Moreover, a very considerable gain in impressiveness, dignity, and attractiveness, would result from bringing the now scattered Institute buildings into one harmonious whole, upon a site distinctively set apart. Few persons not closely familiar with the Institute realize that it comprehends anything more than the Rogers and the Walker Buildings; and, even when they learn better, the various buildings are so scattered that no adequate idea of the immensity of the Institute's plant or work is possible.

(3) The opportunity for much better social relations, not only among the students themselves, but between the

instructing staff and the undergraduates. Present conditions compel the instructors to live widely scattered throughout the city and its various suburbs. The removal of the Institute into some one suburb would permit of a greater or less concentration of the instructing staff in that region, and would facilitate that social intercourse with cultivated men and women which is so important in the education of young men.

(4) In the same direction, the suggested removal would admit of the inauguration of a suitable physical training for the students, and of the emphasis of festival occasions, such as Class Day, Commencement, Junior Week, and Field Day. All of this has, it is true, little to do with the technical training of the young men, but is, nevertheless, of distinct benefit in their education, and reacts most helpfully upon that social and sentimental side which plays so important a part in the life of a successful college.

The main advantages in favor of removal may then be summed up as:—

1. Increase of public interest through the conspicuousness of so radical a step.
2. The possible creation of a new sentiment and affection for the Institute, stronger even than that already existing.
3. The replanning of the buildings upon a more suitable and unified scheme.
4. The better housing of the students, together with a supervision of their social life.
5. Relief from the noise and disturbances inseparable from the present location.
6. A segregation of buildings and increase in dignity that will make the greatness of the Institute's work more patent.
7. Closer relations among the officers of instruction, and between them and the undergraduates.

These, then, are the principal arguments against and in favor of the suggested removal. Were the conditions of Copley

Square unchanged from those of ten years ago or were they to grow no worse, the question of removal would doubtless remain simply an academic one. Confronted, however, by such questions as are suggested in this article, it is for every one who has interest in the Institute to face the issue squarely, to examine it from all sides, and to express freely and fully his opinion. And all such discussion should keep clearly in view the main considerations which must govern the choice of a new site: that it shall be no further from the city's centre than is demanded by the requirement of securing a large tract of land for a reasonable price; that it shall be readily accessible from many points; that it shall follow the probable trend of the city's best growth; that it shall lend itself to the special purposes and needs of the Institute; that it shall be good property to sell as well as to use for college purposes.

GOVERNMENT ARCHITECTS *

In the earlier numbers of the *TECHNOLOGY REVIEW* during the current year there has been brought to the attention of those interested in the proper application of technical knowledge the subject of a more highly educated technical corps in all offices under the United States government.

Beginning with the ideal condition suggested by the article by François Matthes in the January number of the *REVIEW*, and with the actual present conditions in some branches of the government service, as may be comprehended from the article last published,† this article will discuss an office which is leading the way across the gap. Therefore, let us devote our consideration to the service that may be rendered to this nation by a highly trained and educated corps of architects.

Most of the architectural work of the United States govern-

* See *REVIEW* for January, p. 57.

† An article on the United States Patent Office in the April number of the *TECHNOLOGY REVIEW* (p. 195).

ment is at present controlled by the Secretary of the Treasury, who has attached to his office for this purpose an architect bearing the official title "Supervising Architect of the Treasury Department."

The office of the Supervising Architect has been in existence almost fifty years, beginning with the request made in 1853, by Secretary Guthrie of the Treasury Department, that the War Department suggest the proper organization of the technical force required to design and superintend in building operations.

An officer of the United States Corps of Engineers, Captain Bowman, on duty at that time at the West Point Military Academy as engineer instructor, made a report on organization so acceptable to the Secretary of the Treasury that the Secretary of War was requested to detach Captain Bowman from his military duties at West Point, and to place him on duty in the Treasury Department in charge of the architectural work in the office of the Secretary.

This admirable organization of a corps for the architectural work of the government consisted essentially in the recognition of the wisdom of a superior officer co-operating with the technical force of the Treasury Department in the design and execution of the work.

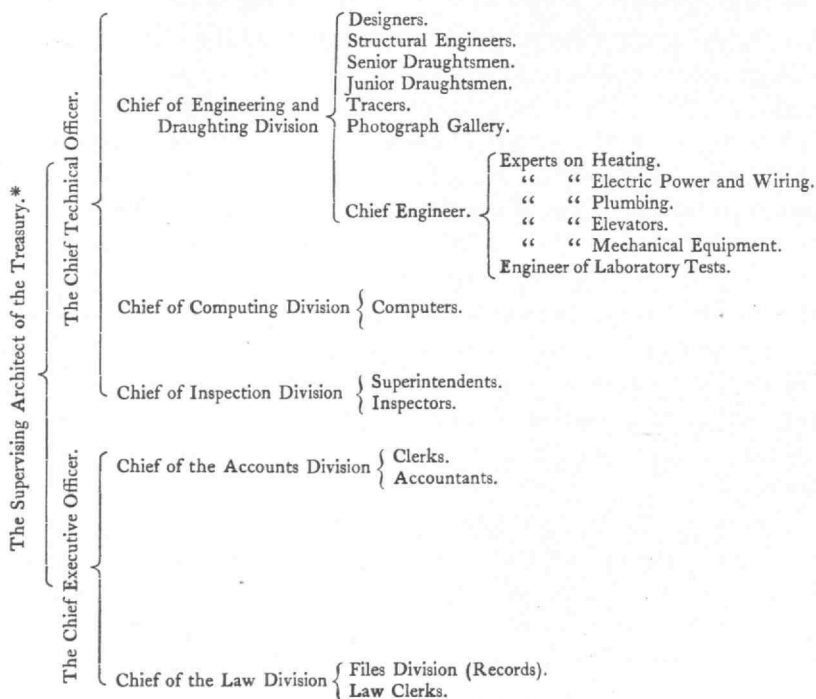
The organization was, however, rendered ineffective, because for a generation of thirty-odd years, following the departure of Major Bowman, the technical work of the office of the Supervising Architect was subordinated to a Treasury Department system of accounts and building contracts.

Supervising Architect Potter reported on the condition of the government architecture under this system, stating that, in justice to himself, to the nation he was under oath to serve, and to architecture herself, he could not continue to serve as a government architect.

Under the present Supervising Architect the office has been freed from the incubus of mere departmental routine, and the *personnel* brought up to the highest standards of training and efficiency, as is made evident by the character of recent buildings and the low percentage of the total cost expended upon the technical force.

The employees are all under the Civil Service, and many of them are from Tech. The statements in the previous numbers as to hours, apply also to this office.

The office of the Supervising Architect as at present reorganized is a branch of the office of the Secretary of the Treasury, and is graphically illustrated as follows : —



Of the salaries, it should be noticed that, while promotion is on the basis of merit, the lower grades are better paid in proportion to ability than the higher grades, and that the office is, like most government offices, a better place to start in than to stay in.

The buildings designed and erected under the control of this office consist principally of the buildings required for the postal,

* Information as to the duties, also as to time, place, and subject-matter of examinations and salaries for any of these positions, is to be had on application to the Civil Service Commission at Washington.

customs, and other revenue services, for the United States courts and other federal offices, these several branches of the government service in any city occupying usually a single building. The buildings designed are, therefore, federal buildings, entirely under control of the central government at Washington.

At the present time such buildings differ greatly from the somewhat similar type of French buildings, known as *Hôtels de Ville*, in the design of which French architecture is brought so closely in touch with the life and welfare of the citizen and the future of the nation.

If a government corps of architects is to become of the greatest service to the United States, the work of that corps must become the expression of that higher architecture of which the *Hôtel de Ville* has become a living type in the hands of our confrères in France.

The higher architecture connects the business of a government with the higher purpose of a nation,—that of teaching its people to work best and live best and think best.

It is only through this "Science of Being" (to which the eminent President of the Massachusetts Institute of Technology, Dr. Henry S. Pritchett, called the attention of the students, in his admirable address, "What is Truth?"), the science which connects the "real philosophy of life," the business of a government, and the "making of a living," that the architects of the government may hope to lead the architects of the nation to the higher architecture, and to lead the nation into a higher civilization, this being pre-eminently the duty of the enlightened architect.

Not individuals, but nations, are first brought to judgment. Nations are now dependent for their very continuance in the struggle for existence upon the services of science. Laws greater than any legislature can pass govern not only materials, but men and nations. It is for the scientifically trained man to lead this nation in the direction of harmony with these higher laws, and to keep it abreast with the other nations of the earth, lest, like other nations, it fall behind and perish.

Therefore, to "the prayer of the educated man, the courageous

man, the tolerant man,—‘grant in this age knowledge of Thy Truth,’”—let us add the prayer offered at the dedication of the American-Egyptian obelisk to the memory of Washington : * —

“Almighty God, Ruler of nations and of men, we to-day are specially called to acknowledge as Thy gift George Washington : in so far as he followed the inspirations of Wisdom and Virtue, may we follow him.

“O God, the High and Mighty Ruler of the Universe, bless to-day the President of the United States and all others under like responsibility.

“O God, throughout our land let Amity reign ; heal every wound opened by human failing or human wrong ; deliver us from evil wrecking our nation.

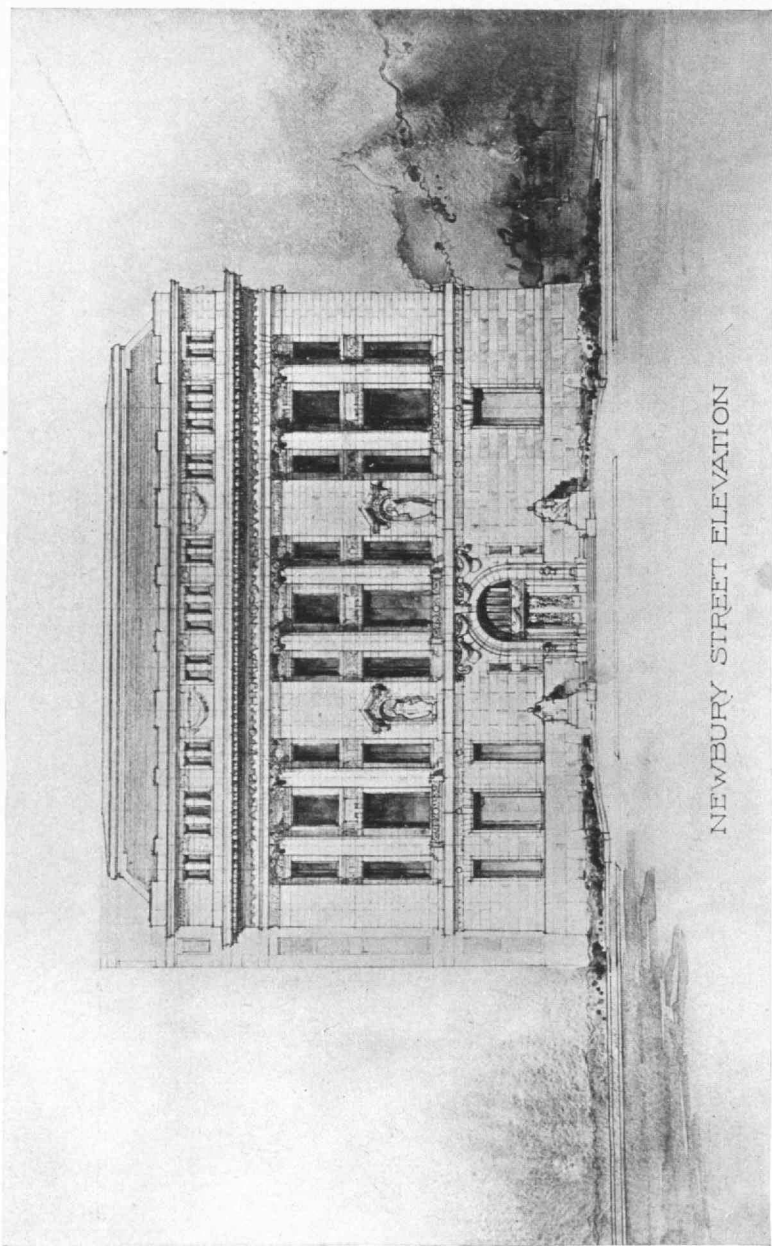
“Bless all efforts to enlarge our sphere of knowledge, that true wisdom may be garnered by our people. May Nature yield her secrets for man’s good and for Thy Glory, because Thou wouldst have raised a light to those in darkness living. For this great mercy, O God, we thank Thee.

“Give us the rain and the fruitful season. Let no blight fall upon the tree, no disease upon the cattle, no pestilence upon man.

“And for the generations to come, yet unknown, may this monument to the memory of George Washington stand as a witness for those virtues and that patriotism which, lived, shall secure for them LIBERATION forever.”

WM. W. STEVENS, '98.

* From the prayer offered February 21, 1885, by the Rev. Henderson Suter, rector of Christ Church, Alexandria, Va., where Washington worshipped.



NEWBURY STREET ELEVATION

EXAMPLES OF NOTABLE WORKS BY INSTITUTE MEN

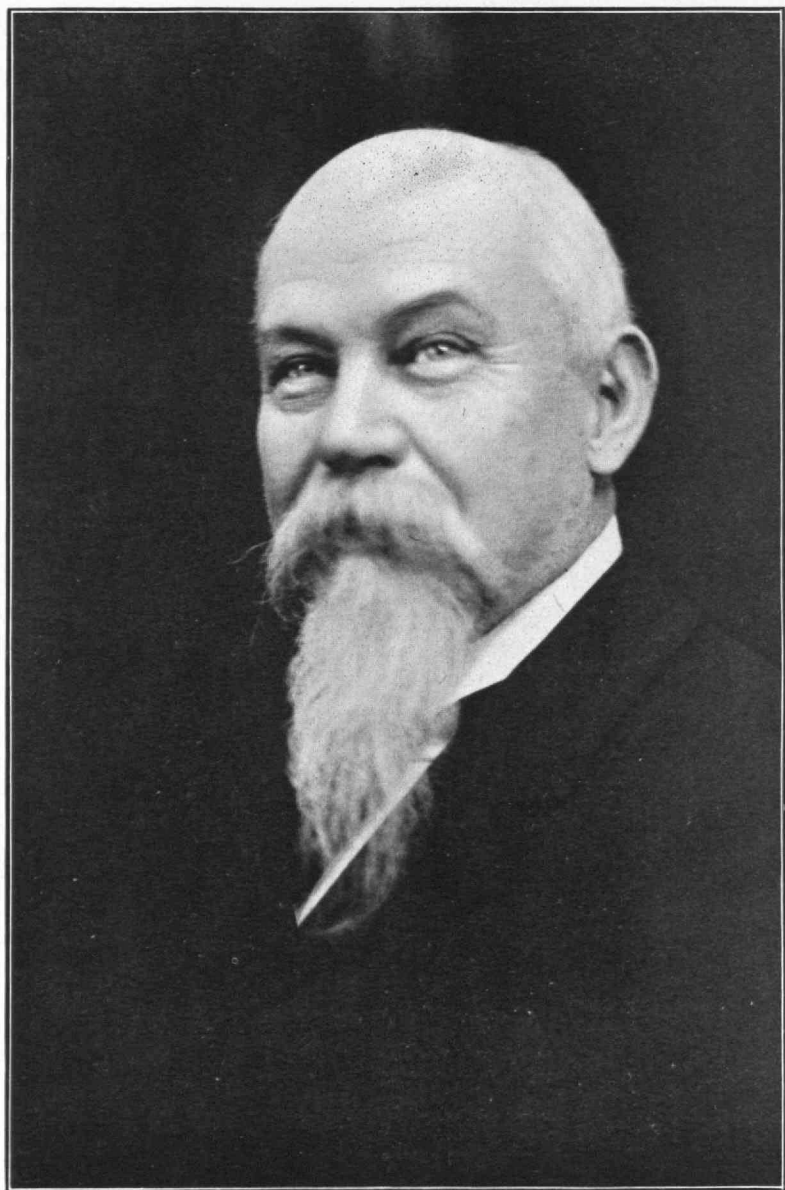
THE NEW BUILDING FOR THE BOSTON ATHENÆUM

On May 26 the plans of William E. Putnam, Jr., and Allen H. Cox, were selected by the Building Committee of the Boston Athenæum from among those submitted by architects from Boston, New York, Philadelphia, and Washington, in a competition open to all architects. Ten of the leading firms of the country were invited to enter and receive compensation for doing so, while all others were at liberty to submit plans at their own expense. The designs had no name, motto, or device attached, and were known to the committee only by numbers given them by the receiver. The trustees accepted the recommendations of their Building Committee, and have appointed Messrs. Putnam and Cox architects for the new building.

The building will be situated at the corner of Arlington and Newbury Streets, overlooking the Public Gardens. It will be built of light-colored granite, simple and dignified in design, absolutely fire-proof throughout, and with everything in the way of library furniture and arrangements of the best and latest type. The plan is simple and direct, and the elevations a logical outgrowth of the plan. The building is about 90 x 117 feet, and, without the land, will cost, complete, very nearly half a million dollars. The main entrance is on Newbury Street, while the entrances for the books and janitor are on the public alleyway. At the back a ten-story stack, to contain three hundred thousand volumes, with floors 7 ft. 6 in. apart, runs uninterrupted from first floor to roof, and is supported upon its own foundations. On the first floor are the Delivery Room, the Periodical and Newspaper Reading Room, and the Map and Atlas Room. On the second, or principal, story are the Reference Room, containing the card catalogue, the Cataloguing Room, the Conversation Room, the Librarian's and Stenographer's Rooms, and the General Reading

Room. This last is the most important room in the building, 84 ft. long, 36 ft. wide, with a clear space of 28 ft. from floor to ceiling. Here will be accommodated about 28,000 volumes on 3,500 linear feet of shelving. The alcove and balcony system has been used; but the heavy, massive columns of the Reading Room of the present library are replaced by tall, slender iron shafts. The balcony supported by these columns is also of iron and, besides carrying a large number of books, will give access from the hallway to four special study rooms. On the third story are the Locked Room,—a room for valuable collections,—the Bound Newspaper Room, the Art Room, and an Exhibition Room, all lighted by side windows and large skylights. Besides the principal floors there are two mezzanine stories. On the lower of these, between the first and second floors, are located cloak-rooms, smoking-rooms, and lavatories for men, coat-room, parlor, and lavatories for women, and the periodical and newspaper storerooms. On the upper of these, between the second and third floors, are the Trustees' Room, the Document Room, the Exchange Room, the Duplicate Room, and three special Study Rooms. The large reading-rooms are both located on the Arlington Street side, and run the entire length of that façade, while on the Newbury Street front are the principal administration-rooms. This insures a splendid view of the Gardens from the principal rooms, used by the proprietors, and an abundance of light and sunshine to the rooms occupied by the employees. The hallways are all spacious, and the stairway liberal. An elevator connects all the main floors and floors of the stack, and two electric lifts carry books from the basement to the stack and to the Cataloguing and Trustees' Rooms.

Mr. Putnam is a graduate from Harvard of the class of '96, and received a degree from the Institute in the class of '98. After working in some of the Boston offices, he started out for himself, and has been practising in his own name for about two and a half years. Mr. Cox was a special in the class of '98 at the Institute; after leaving, he went to Europe, where he has been studying in the *École des Beaux-Arts* and in the Parisian studios ever since. He came over from Paris especially for this competition.



PROFESSOR ALPHEUS HYATT

For eighteen years, from 1870 to 1888, Alpheus Hyatt was Professor of Zoölogy and Palæontology at the Institute of Technology. The REVIEW, through the courtesy of the secretary of the Boston Society of Natural History, has the privilege of printing the following extracts from the Memorial of Professor Hyatt which has just been issued as one of the publications of that society : —

“ At the General Meeting of the Society held on Feb. 5, 1902, the President having made formal announcement of the death of Professor Alpheus Hyatt, it was unanimously voted that the Council be requested to make arrangements for a suitable memorial meeting. Accordingly, on April 25, 1902, there was held a meeting under the joint auspices of the Society, the Teachers' School of Science, and Boston University. Dr. Charles Sedgwick Minot, President of the Boston Society of Natural History, presided. He opened the meeting with the following remarks on the life of Professor Hyatt : —

“ Alpheus Hyatt, a descendant of an old Maryland family, was born April 5, 1838, at Washington, D.C. He died at Cambridge, Mass., on Jan. 15, 1902. His death was sudden, and occurred while he was on his way to attend a regular meeting of the Boston Society of Natural History. In 1856, when eighteen, he entered the Freshman class at Yale, and remained in that college one year. In 1858 he went to Harvard, in order to study under Professor Louis Agassiz, and graduated from the Lawrence Scientific School in 1862. He served during the latter part of the Civil War in the Union Army, and retired with rank of captain. In 1867 he married Miss Ardella Beebe; and in the same year he went to Salem, together with E. S. Morse, A. S. Packard, and F. W. Putnam, his fellow-pupils under Agassiz and his lifelong friends. They worked together at the Peabody Academy and for the establishment of the *American Naturalist*. In 1870 he became the Custodian, in 1881 the Curator, of the Boston Society of Natural History, which posi-

tion he held at the time of his death. He was Professor of Zoölogy and Palæontology at the Massachusetts Institute of Technology from 1870 to 1888, and Professor of Biology at Boston University from 1877 to his death. He was the founder of the seaside laboratory at Annisquam, and took the leading part in the foundation of the Teachers' School of Science and of the American Society of Naturalists. He was elected a member of the National Academy in 1875, and since then to corresponding honorary membership in numerous scientific societies. He received the honorary degree of LL.D. from Brown University in 1898."

Professor Edward S. Morse said, in part:—

"I am asked to speak of Professor Hyatt's life in his early Cambridge days. An intimate friendship of forty-three years, extending from early manhood to mature life, is, in some respects, a bar to the critical study of a man's life. Everything is taken for granted, nothing offends. In order to get a personal view of Hyatt in his student life at Cambridge, it is necessary to preface it by a sketch of his environment at that time. The associates with Hyatt now living, and who have continued their scientific work, were the younger Agassiz, Scudder, Putnam, Shaler, Verrill, and the writer, and, later, Bickmore and Packard. Of these, Agassiz lived with his father, Scudder lived at his home in Boston, Hyatt had rooms in Divinity Hall, while the rest of us lived in a wooden building which stood on the present site of the Peabody Museum. Our rooms were in the second story of the building, the doors of our chambers opening into a large, square, central room, which we used for meetings of the Agassiz Zoölogical Club. This club was organized in 1860, and we met once a week to read papers and discuss questions connected with our work. Professor Agassiz often attended these meetings, and endured patiently our papers, and afterwards commented upon them adversely or otherwise. Agassiz's conversations at these times were very inspiring. He gave interesting reminiscences of Humboldt, Cuvier, Döllinger, and many other eminent men. Hyatt always attended these meetings, and took an active part in the discussions.

"Hyatt was constant in his friendships. His manners were

always courtly. He rarely discussed local or national politics, though he held pronounced views on these subjects. He was absolutely indifferent to adverse criticism; for, with a natural sense of justice, he permitted others to enjoy their own opinions. He regarded with equanimity, and even kindness, the inability of his friends to grasp fully the principles which he had enunciated, and in which he was completely absorbed. Fully convinced that time would prove the truth of his views, he never expressed any impatience at their slow recognition. He was never aggressive, but pursued with infinite assiduity and slow German patience the various investigations he entered upon at different times."

Professor Alpheus S. Packard said, in part: —

"To me it has been assigned to give on this memorial occasion my impressions of the value to science of Professor Hyatt's investigations.

"His work was mainly confined to zoölogy, to a study of the morphology and phylogeny of the molluscs and allied groups, but more especially to the fossil cephalopods.

"While he may be regarded as a specialist, having devoted the greater portion of his life — some forty years — to the study of the cephalopod molluscs, particularly the ammonoids, he was also an all-round man, a thinker, a generalizer, a philosopher.

"He was no closet naturalist, but from youth to mature life had a wide experience in out-of-door work, or bionomics. He was not a mere palæontologist; for he was a good field geologist, and in studying the European ammonites acquired an intimate knowledge of the stratigraphy of the ammonite-bearing beds, and of the succession of species and genera from the lower to the higher strata.

"He was from start to finish a many-sided zoölogist, studying the embryology and morphology not only of the molluscs, but of the fresh-water moss-animals (Polyzoa). His most important work in systematic zoölogy was in assigning the sponges in 1876 to a separate phylum or branch of the animal kingdom, this being the outcome of special work not only in their classification, but in their structure and embryology. Although anticipated by MacAllister in referring the sponges to a separate phylum, his own conclusion was the result of independent labor.

"His most peculiar investigation, and one which brought into play his characteristics as a patient analytic student of facts and as a synthetic philosopher, was what he was fond of calling his 'old age theory.'

"He also extended and carried out the idea of Darwin and others that the evolution of species and genera was more rapid in the early geological periods than now. He emphasized the view that a type in beginning its career, on migrating into unoccupied regions, under new conditions of life, and free from competition, varies, greatly accelerates its development, and thus gives rise to new groups.

"Professor Hyatt completely resisted and overcame the danger of too great specialization. In his own generation, if we mistake not, he will take rank with Haeckel, Cope, Marsh, Gaudry, Bernard, Neumayr, and others, who have by their researches placed the science of palæontology on a vastly higher plane."

Professor William M. Warren, in the course of an interesting address on Professor Hyatt's work as Professor of Biology at Boston University, said:—

"In all his personal work in the department it was perfectly evident to the class that Professor Hyatt spoke from knowledge at first hand. He had the scrupulous regard for fact that characterizes the man that knows at what pains facts are determined. When he spoke of sponges and called a sponge a sponge, we knew that there was many a variety of sponge that owed to Professor Hyatt its scientific existence and its very name. And, when he mentioned ammonites and nautiloids, we felt that he knew them through and through, straight, coiling, close coiled, and uncoiled, and had read in the sequence of their forms the larger principles by which facts are organized into science."

Mr. Arthur C. Boyden, dealing with Professor Hyatt's work for the Teachers' School of Science, said, in part:—

"We are indebted to him for the full realization of the thought that the introduction of science-teaching in the schools requires the careful preparation of the teachers in the methods and materials of scientific work. It was a fortunate moment for this movement

when, in 1870, Professor Hyatt suggested to Mr. John Cummings, a Boston merchant, the necessity of scientific lectures and laboratory lessons for teachers exclusively. The suggestion was immediately taken up, funds were forthcoming, and a committee consisting of Mr. Cummings, Professor Hyatt, and Professor Niles, was appointed to formulate plans. From that time, for over thirty years, Professor Hyatt continued in general charge of the work, gradually pushing it forward to the high position which it now holds. This movement had many difficulties to be met and overcome: there were periods of ebb and flow in enthusiasm which had to be wisely met. Never, through all these years, did Professor Hyatt give up the thought which was back of this movement in behalf of the teachers. This institution had peculiar difficulties to be overcome: it had no buildings of its own, no organized faculty of instruction, no body of resident students, no invested funds, no recognized place among educational agencies. It had to work up a constituency among busy teachers who were willing to use their spare time for this extra instruction, and at times it must labor against the inertia of a school system which was loath to admit science into the traditional curriculum of studies. All these difficulties were overcome. A recognized position was gained for the school with adequate financial support; many and able instructors were obtained who were fitted to conduct laboratory lectures and field excursions with large numbers of critical teachers; the subject gained the support of school authorities in all parts of the State; and true scientific methods were introduced into a large number of schools. Over twelve hundred teachers came under the influence of the instruction of such experts as Professor W. H. Niles, Professor G. L. Goodale, Professor F. W. Putnam, Professor W. M. Davis, the lamented Dr. R. W. Greenleaf, Professor L. M. Norton, Professor W. O. Crosby, Professor G. H. Barton, and Professor Hyatt himself. In all these years, Professor Hyatt persistently pushed forward the plans, gradually placing the school on a firm scientific and educational foundation."

The reading of a letter from Professor Frederick W. Putnam, unavoidably absent, brought the meeting to a close.

DR. LOUIS DUNCAN

Dr. Louis Duncan, appointed by the Corporation, Professor of Electrical Engineering and head of the Electrical Engineering Department, was born in 1861. In 1876 he entered the United States Naval Academy, from which he was graduated in 1880, and whence he went on the usual two years' cruise.

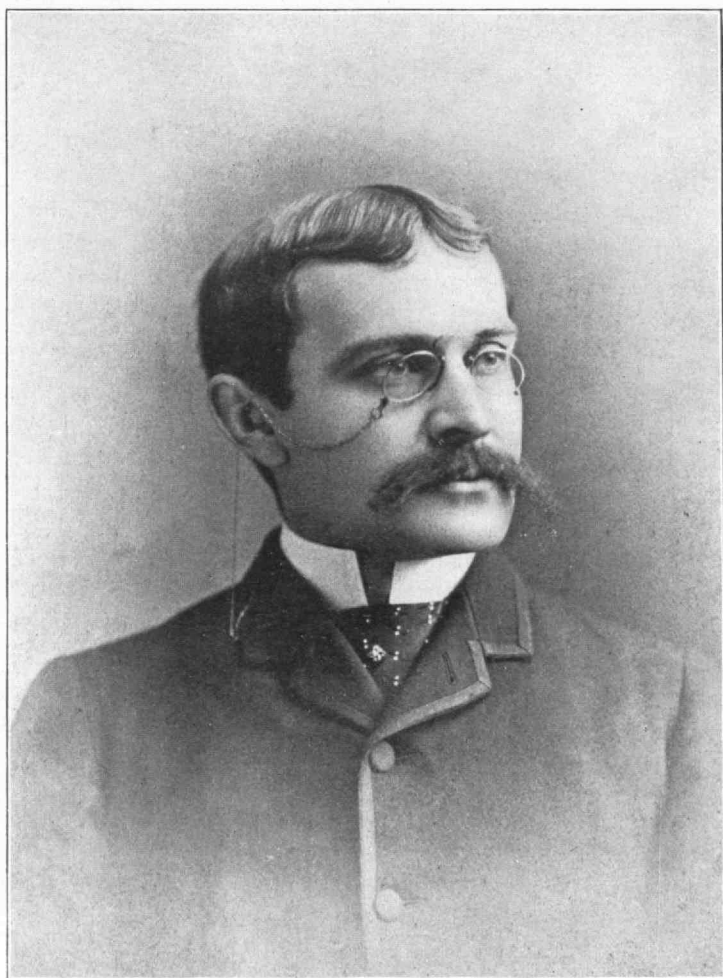
In 1882 he was ordered to the Johns Hopkins University to assist the late Professor Rowland in the determination of the Ohm, the United States government having made a special appropriation of \$12,000 for that purpose.

In the summer of 1883 Mr. Duncan took a course of torpedo instruction at the Torpedo School at Newport, R.I., and in the following year was assigned to special duty at the International Electrical Exhibition held by the Franklin Institute of Philadelphia. There he was elected president of the Board of Judges.

Receiving the degree of Ph.D. from the Johns Hopkins University in 1885, he resigned in 1886 from the Navy, with the rank of Ensign, and started a course of Applied Electricity at Johns Hopkins, where he remained until 1898. Meanwhile he was doing much outside engineering work, being engaged in the building of a number of lighting and railroad plants. Resigning from Johns Hopkins in 1898, Dr. Duncan was major, during the Spanish-American War, in the First Regiment of Volunteer Engineers. Since that time he has been engaged in engineering work, having had much experience in traction, lighting, transmission, and telephone development. He is at present electrical engineer for the New York Rapid Transit Commission and for several railroad and telephone companies.

He has twice been president of the American Institute of Electrical Engineers, is a member of the Mathematical Society of France, member of the American Philosophical Society, and an honorary member of the Franklin Institute.

He has made various researches in connection with the science of electricity, and has published numerous scientific papers.



COMMENCEMENT WEEK

CLASS DAY

The Class Day exercises were held in Huntington Hall on Monday, June 9, at two o'clock. The opening address was made by the class president, Harold Young Currey, who, in turn, introduced the first marshal, Louis Shattuck Cates, who formally bade welcome to the guests of the day. The marshal introduced successively the Historian, Walter Haven Farmer, the Statistician, William Jason Mixter, the Prophet, Carleton Brigham Allen, and the Orator, Isaac Rayne Adams. The speeches of these men, while conventional, were fully up to the level of Class Day affairs, and gave great pleasure and satisfaction to the large audience assembled. The day being of the most beautiful June vintage, the tea on the lawn between the Rogers and Walker Buildings was unusually delightful.

Preliminary to Class Day itself was the reception given by the Massachusetts Institute of Technology Alumni Association to the class of '02 on the evening of Friday, June 6, at the Hotel Brunswick. On the following Sunday, June 8, the baccalaureate sermon was preached at the New Old South Church by Dr. George A. Gordon, from the text, "The cloke that I left at Troas with Carpus bring, when thou comest, and the books, especially the parchments" (2 Tim. iv. 13). Dr. Gordon said, in closing:—

"Young gentlemen of the graduating class, One epoch of your life is about to close; another epoch is about to open before you. You have long looked forward to this time, and one great object of desire is almost within your grasp. You have won distinction here, you have earned the right to leadership in your generation. You are about to leave your Alma Mater for the Institute of the world. You will seek new ends, win fresh successes, attain other distinctions. The world is all before you where to choose your lot. It awaits your coming with generous welcome and high

expectation. Take with you into the new Institute the things that have made the old Institute here in Boston so rich and great to you. Take with you its famous name, and add to its distinction by the honor of your career. Forever cherish its ideal of the man of science as the lover of truth and the servant of society. Carry on into the future the consciousness of order and its inviolableness that your education here has given you, and the sense that obedience to law brings the universe, in ever-larger measure, into life as the helper of mankind. Hold in perpetual remembrance the high example of the wise and beloved teacher. Take with you all the friendships, all the light-heartedness, and all the rich humanity of these four unforgettable years. And leave not behind the good wishes and the prayers of those whose confidence in you and whose sacrifice for you made it possible for you to come hither; and as the sea into which all these separate streams of interest and dear affection flow, as the ocean tide that returns upon these to greaten them, take with you in vision, in faith, the infinite presence, the grace of the Lord Jesus Christ, the love of God, and the communion of the Holy Spirit. God bless you. Farewell."

COMMENCEMENT

The Commencement exercises were held on Tuesday, June 10, at half-past two, in Huntington Hall. Abstracts of theses were read by the following men, not chosen for superiority of scholarship, but simply because their theses were indicative of the wide range of investigation of the Institute Seniors: —

HENRY MCBURNEY, A.B. (<i>Harvard</i>),	Civil Engineering,
Tests of Bridge Rollers.	
JAMES DUANE IRELAND, Ph.B. (<i>Yale</i>),	Mechanical Engineering,
Tests on Steel Rivets.	
WALDO HUNTER COMINS,	Mining Engineering,
A Study of Calumet Fine Slimes.	
LEROY ESKRIDGE KERN, A.B. (<i>Randolph-Macon</i>),	Architecture,
A Design for a Museum of War.	

- HERCULES WALLACE GEROMANOS, Chemistry,
An Analytical Investigation of the Products of Acid Hydrolysis of Starch.
- GARDNER ROGERS, Electrical Engineering,
A Test of the Generating Plant of the Brockton and Plymouth Street Railway Company.
- WILLIAM JASON MIXTER, Biology,
An Investigation of the Relationships of *Bacillus coli* and Certain Lactic Acid Bacteria.
- EVERETT LYMAN UPHAM, General Studies,
The Operations of Terminal Tops-markets in Europe.
- FRANKLIN TINKER ROOT, Chemical Engineering,
A Study of the Mercerization of Piece Goods.
- DONALD MINOR BELCHER, Sanitary Engineering,
A Study of Bacterial Action in a Septic Tank.
- EVERETT OWEN EASTWOOD, C.E., M.A. (*University of Virginia*), Naval Architecture,
An Investigation of the Launching of a Steam Yacht.

After a short but vigorous and impressive address to the young men, President Pritchett awarded degrees as follows : —

MASTERS OF SCIENCE

- ROBERT RHEA GOODRICH, S.B. Boston
The Calculation of the Constants of a Wagner Single-phase Induction Motor.
- LOUIS RICHARD HENRICH, S.B. Buffalo, N.Y.
A Design for an Athenæum for a City of Importance.
- WILLIAM GORDON HOLFORD, S.B. Hazardville, Conn.
A Design for a Protestant Church in the Byzantine Style.
- ELLIS FULLER LAWRENCE, S.B. Cambridge
A Design for a Veterans' Home in a National Battlefield Park.
- JULIUS EDWARD OBER, S.B. Boston
The Precipitation of Colloids by Electrolytes.
- LANGDON PEARSE, A.B., S.B. Boston
Concrete Steel.
- WILLIAM CLIFTON PHALEN, S.B. Gloucester
A Study of Shrinkage in Clay.

- BART ERNEST SCHLESINGER, A.B., S.B. Brookline
 A Systematic Procedure for the Qualitative Detection of the Rare
 Metals of Certain Groups.

BACHELORS OF SCIENCE

COURSE I., CIVIL AND TOPOGRAPHICAL ENGINEERING

Francis Deane Avery, Howard Baetjer, William Manning Bassett, Charles Judson Bonnemort, Erastus LeRoy Brainerd, Walter Havens Farmer, Harold Hervey Fletcher, Kenneth Crothers Grant, Lester Clark Hammond, Albert Eaton Lombard, Henry McBurney, Francis Joseph Mague, Arthur Smith More, John Russell Morse, Arthur Thomas Nelson, George Paul O'Connell, George Theophanes Paraschos, Harry Bradford Pond, John Howard Redfield, George Tilley Seabury, James Woodberry Smith, James Loockermann Taylor, Jr., Warren Crosby Taylor, Conrad Wendel.

COURSE II., MECHANICAL ENGINEERING

Clarence Mason Allen, Henry Allison Ames, Cecil Bancroft Annett, Joseph William Ballard, Norman Easton Borden, Francis Bradley, Matthew Brodie, Harry Beaver Canby, Arthur Luke Collier, Harold Young Currey, Edward Henry Cutter, Jesse Jennings Eames, Walter Spencer Fitch, John Mark Fitz Gerald, Richard Lincoln Frost, Francis Brisbane Galaher, Howard Nelson Hunt, John Albert Hutchinson, James Duane Ireland, Charles Wetmore Kellogg, Jr., Frank George Lane, Kenneth Lockett, James Joseph Mahar, John Reginold Marvin, Herbert Schaw May, Robert Mayo, Jr., Arthur Henry Nickerson, Earl Phelps Pitts, Clyde Richmond Place, Edson Thompson Pollard, Andrew Eliot Ritchie, Frank Ambrose Robbins, Jr., Walton Harvey Sears, Clarence Douglass Starr, Horatio Ward Stebbins, Charles Clark Stover, Edwin Whitman Sturtevant, Theodore Howard Taft, Otto Conrad Thanisch, Willis Harvey Towne, Henry Otis Trowbridge, Paul Weeks, Henry Wilmarth Westcott, Wade Lyndon Wetmore, Louis Ezra Williams, William High Williston.

COURSE III., MINING ENGINEERING AND METALLURGY

George Bright, Jr., Charles Henry Burr, Louis Shattuck Cates, Waldo Hunter Comins, Harle Oren Cummins, Frank Joseph Eager, Thomas Witherbee Foote, Charles Bertram Hollis, Benjamin Edward McKechnie, Arthur Harold Sawyer, Charles Adrian Sawyer, Jr., Charles Hamilton Sisson, Charles Alfred Smith, Orlando Sargent Stockman, Lowell Bosworth Wilder.

COURSE IV., ARCHITECTURE

Isaac Rayne Adams, Alfred Warren Allyn, Homer Eugene Bartlett, Charles Henry Boardman, Jr., John Clyde Fruit, Maurice Goldenberg, William Roger Greeley, Frederick Huston Hunter, LeRoy Eskridge Kern, Harry George Koch, Ernest Boyd MacNaughton, Arthur Richardson Nichols, Walter Purton Ross Pember, Gilbert Townsend, Louis Edgar Vaughan, Walter Jesse Wellman, Philip Richardson Whitney, Austin Clarence Wood.

COURSE V., CHEMISTRY

Edna May Williston Best, Arthur Robert Gregory Booth, Harlen Monroe Chapman, Lloria Robinson Culver, Laurent Esaie Daloz, Duncan Rogers Franklin, Hercules Wallace Geromanos, Abel Martin Hamblet, Samuel Colville Lind, John Rice Mardick, Philip Coombs Pearson, Herbert Leslie Sherman, Edward Cordon Thatcher, Robert Seaton Williams.

COURSE VI., ELECTRICAL ENGINEERING

George Raymond Blodgett, Bernard Winslow Capen, Lawrence Gardiner Coburn, John Lee Curtiss, Harold Henry Davis, Joseph Wilber Durbin, William Andrew Durgin, Alfred William Friend, Ralph Percy Gifford, Emanuel Gorfinkle, Elmer Merrill Hervey, James Carleton Howe, Floyd Byron Hull, Edwin Elliot Kimball, Antonio Martins Lage, Harold Davis Larrabee, Charles Shelley Lawson, Frederick William McIntyre, William Hugo Matthies, Byard William Mendenhall, Humphreys Milliken, Robie Walter

Morrill, Edwin Eugene Nelson, Newell Caldwell Page, Pierre Barbeau Pendill, Fred Chesley Randall, Irving Wood Reynolds, Gardner Rogers, Nathaniel Sprague, Jr., Henry Stanton Bogue Stimson, Arthur Eugene Swan, Ralph Emery Thurston, Charles Prescott Tolman, Wilbur Lewis Vatter, Robert White, Jr.

COURSE VII., BIOLOGY

Edith Arthur Beckler, Charles Galloupe Mixter, William Jason Mixter, Burton Garfield Philbrick, Eleanor Packer Rathbun.

COURSE VIII., PHYSICS

Beulah Chapin Hill, Cora Stella Hopwood, George Everett Marsh, Jr.

COURSE IX., GENERAL STUDIES

Bertram William Batchelder Greene, Russell Bryant Lowe, Everett Lyman Upham.

COURSE X., CHEMICAL ENGINEERING

Harold Otis Bosworth, Robert Vaughan Brown, Arthur Parker Hall, Charles Emmett McCarthy, Frank Kollock Mitchell, Arthur Edgar Nash, Franklin Tinker Root, Royal Linfield Wales, Charles Lawrence Wright.

COURSE XI., SANITARY ENGINEERING

Donald Minor Belcher, Francis Jerome Field, Farley Gannett, August Ernst Hansen, George Everett Mather, Chester Harold Wells, Rufus Mason Whittet.

COURSE XII., GEOLOGY

COURSE XIII., NAVAL ARCHITECTURE

Carlton Brigham Allen, Allen Lansing Appleton, Everett Owen Eastwood, Harold Arthur Everett, Henry Abbott Ferrin, Archibald Gardner, Stephen Ayrault Gardner, Jr., Leslie Walker Millar, Claude Eldred Patch, Winthrop Merton Rice, George Morton

Spear, Walter Owen Teague, Elisha Walker, Charles Franklin Willard.

Including the Masters of Science, the number of graduates in each course is as follows :—

Course I., Civil and Topographical Engineering, twenty-five; Course II., Mechanical Engineering, forty-seven; Course III., Mining Engineering and Metallurgy, fifteen; Course IV., Architecture, twenty-one; Course V., Chemistry, seventeen; Course VI., Electrical Engineering, thirty-five; Course VII., Biology, five; Course VIII., Physics, three; Course IX., General Studies, three; Course X., Chemical Engineering, nine; Course XI., Sanitary Engineering, seven; Course XII., Geology, none; Course XIII., Naval Architecture, fourteen.

The young men graduating came from the following places :—

FOREIGN COUNTRIES

Brazil

Rio de Janeiro 1

France

Paris 1

Germany

Hamburg 1

Viersen 1

Turkey

Constantinople 1

UNITED STATES

Alabama

Mathews 1

Colorado

Denver 1

Georgetown 1

Connecticut

East Woodstock 1

Hartford 1

New London 2

Rockville 1

Stamford 1

Unionville 1

District of Columbia

Washington 2

Illinois

Chicago 5

Evanston 1

Maine

Portland 1

Woodfords 1

Maryland

Baltimore 1

Massachusetts

Amesbury 1

Arlington 3

Barre 1

Belmont 1

Boston 28

Brockton 2

Brookline 7

Buckland 1

Cambridge	5	Winchester	1
Canton	1	Worcester	2
Chelmsford	1		
Chelsea	3	<i>Michigan</i>	
Cherry Valley	1	Jackson	1
Dedham	1	Marquette	1
Essex	1	<i>Minnesota</i>	
Fall River	1	Duluth	1
Fitchburg	2	St. Paul	1
Gardner	1	<i>Missouri</i>	
Greenfield	1	Kansas City	1
Groveland	1	<i>Nebraska</i>	
Haverhill	1	Lincoln	1
Holyoke	1	<i>New Hampshire</i>	
Hopedale	1	East Jaffrey	2
Hyde Park	1	<i>New Jersey</i>	
Kingston	1	Burlington	1
Lanesville	1	East Orange	1
Lawrence	4	Glen Ridge	1
Lexington	2	<i>New York</i>	
Lowell	7	Babylon	1
Lynn	3	Fishkill-on-Hudson	1
Malden	1	Mount Upton	1
Manchester	1	New York	4
Marlboro	1	North Evans	1
Middleboro	1	<i>Ohio</i>	
Natick	1	Cleveland	1
Needham	1	Dayton	1
Newburyport	6	<i>Pennsylvania</i>	
Newton	11	Hazleton	1
Salem	2	Philadelphia	2
Salisbury	1	Pittsburg	1
Somerville	2	Pottsville	1
South Framingham	1	Wayne	1
Springfield	4	<i>Rhode Island</i>	
Stoneham	1	Newport	2
Stoughton	1		
Turner's Falls	1		
Waltham	1		

Tennessee

McMinnville I
 Nashville I

Utah

Salt Lake City I
 Springville I

Vermont

Bennington I
 Montpelier I

Pittsford I
 Rutland I
 West Brattleboro I

Virginia

Portsmouth I

Wisconsin

La Crosse I
 Milwaukee I
 Oconto I

The final event of graduation was "Tech Night" at the Pop Concerts at Symphony Hall. Large numbers of Institute alumni and undergraduates were on hand, and made their presence known by various Tech cheers and other demonstrations. President and Mrs. Pritchett, as always, received an enthusiastic welcome upon their entrance.

GENERAL INSTITUTE NEWS

CORPORATION NOTES

The two hundred and ninety-third meeting of the Corporation was held at the Institute, June 6. Reports of visiting committees were presented for the departments of Architecture, Naval Architecture, History, Literature and Political Economy, and Modern Languages. The President was authorized, on request of any visiting committee, to appoint a committee of alumni to serve in conjunction with the committee so requesting. This action can hardly fail to be of interest and advantage. The resignations of Mr. Arthur T. Lyman and Mr. Eliot C. Clarke were presented and accepted, and the President was requested to communicate to each of them the thanks of the Corporation for their services and interest. The following letter of resignation of membership in the Executive Committee was also presented:—

My dear Dr. Pritchett,—Leaving town this week, I shall be unable to attend the next meeting of the Executive Committee of the Institute; and, as I shall be absent from the city for several months, and my health is such that I cannot expect hereafter to render the service that every member of the committee should perform, and as in the near future matters of very grave importance must be acted upon, I have reluctantly come to the conclusion that I ought to resign my position, and that a member should be elected who can perform the duties which are now beyond my strength. I therefore authorize you to communicate my resignation to the Corporation, so that at the next meeting the vacancy can be filled in accordance with the provisions of the by-laws.

I must express my regret at feeling compelled by a sense of duty to the Institute to make this communication. My interest in the Institute is unabated. For some twenty years I have never failed to attend a meeting when in the city and physically able to be present, and it is really painful for me to take this step; but I am sure that I ought to.

My relations to you personally and my associations with that committee have been in every way so agreeable that it is hard for me to take official leave of you.

Yours sincerely,

A. S. WHEELER.

It was voted that Mr. Wheeler's resignation as a member of the committee be accepted, and the President was requested to express to him the high appreciation of the Corporation of his work as a member of the committee. Mr. Wheeler has been a member of the Corporation since 1882, and of the Executive Committee since 1883. His eminence as a lawyer and his enthusiastic devotion to the school have made his long service of the highest value. While his relations with the Institute have not brought him much in contact with alumni or junior members of the instructing staff, his dignified presence and geniality will be long remembered by many of the Faculty.

On recommendation of the Committee on Nominations, Messrs. Frederick Perry Fish, Charles Augustus Stone, and Francis Lee Higginson were unanimously elected members of the Corporation. Mr. Fish will be known to readers of the REVIEW as a lawyer of high standing and president of the American Bell Telephone Company, Mr. Higginson as an eminent banker, and Mr. Stone as a member of the class of '88, and of the firm of Stone & Webster.

The following appointments by the Executive Committee were confirmed:—

John Daniel Runkle, Professor Emeritus of Mathematics.

William Harmon Niles, Professor Emeritus of Geology.

Dr. Harry Walter Tyler, head of the Department of Mathematics.

Dr. Louis Duncan, Professor of Electrical Engineering and head of the department.

Assistant Professor William Otis Crosby, Associate Professor of Geology.

Assistant Professor Harry Ellsworth Clifford, Associate Professor of Theoretical Physics.

Dr. Forris Jewett Moore, Assistant Professor of Analytical Chemistry.

Dr. James Locke, Assistant Professor of Analytical Chemistry.

Mr. Harrison Washburn Hayward, Instructor in Mechanical Engineering.

Mr. Charles Austin Mace, Assistant in Industrial Chemistry.

Mr. Arthur Thomas Nelson and Mr. Walter S. Hanna, Assistants in Civil Engineering.

Mr. Newell Caldwell Page and Mr. Irving Wood Reynolds, Assistants in Physics.

Mr. Fred Chesley Randall, Assistant in Physics.

Mr. Orlando Sargent Stockman, Assistant in Heat Measurements.

It was voted to confirm the action of the Executive Committee in purchasing a tract of about 505,000 square feet of land from the trustees of the Brookline Riverdale Land Association; also to approve revised plans for the building for the Department of Electrical Engineering.

Degrees were conferred on one hundred and ninety-three candidates for the Bachelor's Degree and eight candidates for the Master's Degree, this latter number being larger than in any previous year. There were no candidates from the Massachusetts School of Design.

FACULTY NOTES

Graduate Fellowships for the coming year have been awarded to R. W. Balcom, J. W. Brown, J. H. Walton, from the Austin Fund, and M. DeK. Thompson from the Austin and Savage Funds,—all for study in Europe. Grants from the Austin Fund have also been made to Messrs. H. E. Bartlett, F. H. Hunter, W. P. R. Pember, and G. Townsend of the class of 1902, for graduate study in Architecture at the Institute. The Swett Fellowship has been awarded to Mr. A. I. Kendall, '99, for advanced study at Johns Hopkins University.

A special committee of the Faculty has been appointed to consider and report in regard to the further development of methods of dealing with applications for appointment of graduates. Another committee has been instructed to report in regard to changes of plan for the advanced free courses of the Lowell Institute, with a view to securing better co-ordination and efficiency.

The annual meeting of the Faculty for the election of officers and committees was held May 7. Professor Tyler was re-elected Secretary. Professor Burton was elected Dean. In connection

with administrative changes, referred to elsewhere, Professor Goodwin becomes chairman of the Committee on Publications.

An invitation has been received from the University of Christiania for representation of the Institute at the one hundredth anniversary of the birth of the distinguished mathematician Abel.

After extended consideration of minor changes in the Calendar, the Faculty has voted to suspend exercises for a full week at Christmas, but not, as heretofore, for the Friday and Saturday following Thanksgiving Day.

The American Society of Mechanical Engineers and the American Founders' Association have held their annual meetings at the Institute in May and June.

In connection with the retirement of Professor Niles,* material changes have been made in the work of the department and in the schedules of geological courses. A portion of the instruction will involve the co-operation of members of the Department of Geology at Harvard.

The European exodus of members of the Faculty includes thus far Professor Swain, who is making an engineering tour with Mr. Jackson of the Massachusetts Railroad Commission; Professor Miller, who is visiting engineering institutions and works; Professor Despradelle, who spends the summer in France; Professor Cross, who is travelling in France; Professor Bates, who is in Italy with Mr. C. Howard Walker. Professors Lanza and Goodwin and Messrs. Blachstein and Dart will also spend a portion of the summer abroad.

SUMMER COURSES

As stated in the last number of the REVIEW, summer courses are now conducted by the Faculty, and are no longer, in any sense, a private undertaking on the part of the instructors. The registration of the present year is as follows:—

In mathematics, courses were given in Analytic Geometry by Professor Woods, and in Integral Calculus by Professor Bailey. In mechanic arts there were courses in Forging, conducted by Mr. Lambirth, Chipping and Filing and Machine-tool Work, by

* A review of Professor Niles's important services to the Institute will appear in the October number.

Mr. Smith, and Woodwork, including Carpentry, Wood-turning, and Pattern Work, by Mr. Merrick. In modern languages, elementary and advanced courses were offered in French by Mr. Goodell, and in German by Professor Dippold.

In chemistry there were courses in Inorganic and Analytical Chemistry, conducted by Messrs. Hall and Phelan, and in Air, Water, and Food Analysis, by Mrs. Richards; in physics, in Mechanics, Light, and Electricity, by Professor Wendell; Heat, by Professor Clifford, and Physical Laboratory, by Professor Goodwin; in mechanical engineering, in Mechanism, by Professor Merrill, and Mechanical Engineering Drawing, by Professor Park.

The Department of Civil Engineering offered a course in Surveying, under the charge of Professor Robbins; and courses were given also in Applied Mechanics by Professor Johnston, and Mechanical Drawing and Descriptive Geometry by Professor Faunce.

Courses in Biology were not given at the Institute this season, but were conducted in connection with the Sharon Summer School of Nature Study.

Summer schools of professional study were conducted in connection with the departments of Civil Engineering, Mining Engineering and Metallurgy, and Chemistry.

ENTRANCE EXAMINATIONS

Entrance examinations have been held the present year at the following points: Asheville, N.C.; Austin, Tex.; Belmont, Cal.; Binghamton, N.Y.; Chicago, Ill.; Cincinnati, Ohio; Denver, Colo.; Detroit, Mich.; Exeter, N.H.; Indianapolis, Ind.; Kansas City, Mo.; New York, N.Y.; North Adams, Mass.; Pasadena, Cal.; Philadelphia, Pa.; Pittsburgh, Pa.; Portland, Me.; Pottstown, Pa.; St. Louis, Mo.; St. Paul, Minn.; Springfield, Mass.; Syracuse, N.Y.; Washington, D.C.

The number of applicants, in comparison with last year, is as follows:—

	<i>Preliminary</i>	<i>Complete</i>	<i>Final</i>	<i>Total</i>
1901	329	260	170	759
1902	326	334	229	889

The entering class bids fair to reach nearly or quite 500.

CIRCULAR ON MECHANICAL ENGINEERING

A new circular has been issued by the Department of Mechanical Engineering on the same general lines with other recent departmental circulars. Features of special interest are Professor Lanza's tabulation of the occupations of five hundred and thirty-six living graduates of the department, an account of recent changes in the Engineering Laboratories, and a plan showing their present equipment.

WALKER MEMORIAL

The last few months have been, contrary to expectation, a period of comparative inactivity. The alumni subscription has now reached \$108,805.25. This amount, with the accessory contributions, would have justified immediate work, and it was the confident expectation that the foundation would have been laid by this time. In the course of the spring it appeared, however, uncertain whether the Institute would remain indefinitely in its present location. The officers of the Institute and the committee were of opinion that, however disadvantageous and regrettable might be the delay of construction, it would be unjustifiable to incur the risk of building without a reasonable assurance of permanence of location. While not a little disappointed at this outcome, the committee appreciates that the ultimate result will probably be so much more satisfactory as to compensate for the delay.

LOCATION OF THE INSTITUTE

Some months since, the authorities of the Institute, finding themselves facing the important need of erecting buildings to cost about half a million, were forced to make a careful examination of the whole question of location. This question was, of course, not a new one; but it had been believed that the manifold advantages of the present location and the great difficulties of change were conclusively in favor of continuance. The Institute does not own its land on Boylston Street, and high value has been justly attached to the close proximity of the school to the industrial activities of a

large city, and to the accessibility of its present location for students and teachers using steam or electric transportation. Moreover, the land recently acquired or now purchasable appeared adequate to provide for 1,500 to 2,000 students, which might fairly be considered a maximum for work of the best quality.

On the other hand, it seems uneconomical for the Institute to occupy with its two principal buildings land having a commercial value of about \$25 per square foot, of which only one-third can be covered. The location on a noisy business thoroughfare would be in any case unfavorable, and especially since our work is now so divided as to require the constant passage of large bodies of students across and through that thoroughfare. The separation of our buildings, particularly of the Mechanic Arts Laboratories, is inconvenient and wasteful of time. While the Rogers and Walker Buildings have the advantage of a conspicuous location, whatever growth the school may make is only the more hidden from the public eye. Contact with industrial and engineering men and affairs has been greatly modified by the improved means of transit and the increased dependence on the telephone. The conditions of student life in the vicinity of the Institute tend to become less favorable with the gradual transformation of the surrounding portions of the city from residential to business purposes. After mature consideration of the whole problem, the Corporation, without determining on any change of location, concluded to substitute, for the expensive building planned for the Department of Physics and Electrical Engineering, a temporary structure of one story only, but of extensive ground area, providing completely for electrical engineering and for recitation-rooms for general purposes, leaving the whole of the Walker Building to physics and chemistry. This involves the postponement, for the present, of the Walker Memorial, as already mentioned. Plans for the temporary building have been prepared by Mr. T. H. Skinner, '92; and it is expected that it will be pushed to completion by the beginning of the coming year,—a time at which our need of space will be most urgent in consequence of the large entering class of last year and the pressure for admission in anticipation of the advance of entrance requirements and tuition fee for the coming year.

ADMINISTRATIVE CHANGES

The last number of the REVIEW included a general statement in regard to important changes under consideration by special committees,—one on administrative work, the other on courses of study. The work of the former committee has reached a conclusion, that of the latter committee remaining unfinished until next year.

The objects sought in the administrative reorganization were a redistribution of duties heretofore assigned to the Secretary of the school, and adequate provision for meeting the personal needs of students. The former purpose involved the transfer of a considerable share of responsibility, on the one hand, to other members of the Faculty, on the other hand, to subordinate officers. The organization adopted by the Faculty and approved by the Corporation to attain these needs includes the following officers: President, Secretary, Dean, Registrar, and Recorder. Faculty committees will have charge of publications, including the Catalogue, of the tabular view and room scheme, and of the annual and semi-annual examinations. So far as practicable, such existing conditions are retained as are considered satisfactory.

The Secretary, as a general administrative officer, will co-operate with the President in the conduct of general Faculty business, and will exercise general superintendence over administrative routine. He will have charge of correspondence, entrance examinations, students from other colleges, candidates for graduation, and will be chairman of Faculty committees on petitions, on examinations, and on the tabular view and room scheme.

The Dean will co-operate with the President in matters of general discipline and in relations with students and parents, arranging for systematic aid and advice to students. He will have charge of matters of discipline, student employment, correspondence and interviews with students and parents, boarding places, student societies, athletics, and will be chairman of the committee on first-year students, and a member of the committees on scholarships, petitions, and provisional students.

The Registrar will have charge of registration and related business, including attendance cards, rolls, reports of irregularity, of arrangements for examinations and graduation, of the presentation of student records to the Faculty, of scholarships and numerous routine affairs of the present Secretary's office.

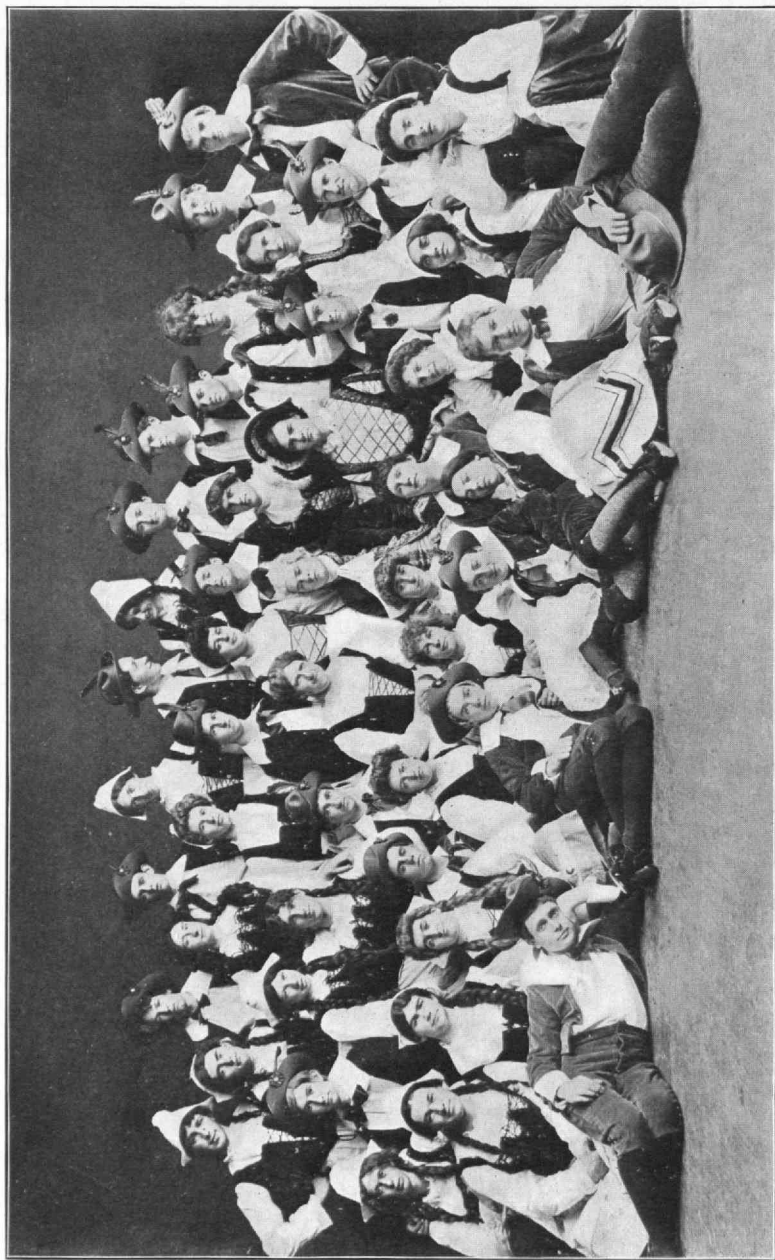
The Recorder will have charge of permanent records of students, and will deal with various connected matters, including petitions and other Faculty business under the general direction of the Secretary.

The *personnel* of this administrative staff will include, besides President Pritchett and Secretary Tyler, Professor Alfred E. Burton as Dean, Mr. Walter Humphreys, class of '97, as Registrar, Mr. O. F. Wells as Recorder. Professor Burton's choice as Dean is most fortunate, as the duties of the new Dean will require not only a measure of sympathy and tact, but good judgment. Mr. Humphreys and Mr. Wells have had successful experience in work corresponding closely with their newly defined duties.

SOCIETY OF ARTS

Since the last issue of the REVIEW the following subjects have been presented before the Society of Arts: "A Trip through Siberia," by Hon. E. J. Hill, member of the National House of Representatives; "Success in Long-distance Power Transmission," by Dr. F. A. C. Perrine, president of the Stanley Electric Manufacturing Company. During the last three years there has been a steady gain in the attendance at the meetings, which has reached this year three times that of any corresponding period since 1875, the average attendance at each meeting being 216.

At the annual meeting, May 8, 1902, the following officers were elected for the year 1902-03: Secretary, George V. Wendell; Executive Committee, George W. Blodgett, Edmund H. Hewins, Desmond Fitzgerald, Charles T. Main, James P. Munroe.



Group from "Applied Mechanics"

THE UNDERGRADUATES

JUNIOR WEEK

The important event of Junior Week, so far as the public is concerned, was the "Tech Show," called "Applied Mechanics," given at the Hollis Street Theatre on the afternoons of April 22 and 25. A general description of the play was given in the April REVIEW (page 220). Following is a list of the performers:—

THE CAST

Bobbie Boylston	} Tech Students on a Vacation in Germany }	. . . ARCHIBALD GARDNER, '02
Lawrence Newbury		. GERALD FRANCIS LOUGHLIN, '03
Francis Huntington		. . . . . SELSKAR GUNN, '04
Freddie Arlington		. . GUSTAVE BOUSCAREN, Jr., '04
Charlie Marlboro		. OTIS DWIGHT FELLOWS, Jr., '04
Georgie Dartmouth		. CHARLES ROGERSON HAYNES, '04
Winthrop Beacon		. . FRANK SPENCER ELLIOTT, '05
Willie Clarendon		. GEORGE WILLIAM PRENTISS, '05
Master Mechanic, Inventor of Mechanical Figures,		
		HARRY WARREN UPHAM, '05
Hans, Assistant to the Master Mechanic		FREDERICK LYLE HIGGINS, '03
Grand Duke Henry, recently returned from America,		
		HENRY CALLENDER FIELD, '04
Master of Ceremonies		WILLIAM JAMES SNEERINGER, Jr., '04
Wilhelm		JOSEPH DANIELS, '05
Herald to the Grand Duke		IRA JAMES BANASH, '05
Herr Knupfel, Proprietor (in name) of Knupfel Inn,		
		HARRY ALLAND STILES, '03
Old Peasant Man		LEONARD ERNEST SCHLEMM, '03
Fritz	} Peasants {	ROBERT DOUGLAS FARRINGTON, '05
Carl . . . . .		. . EDWARD MAY COFFIN, '05
Rosalie, the village beauty, in love with Hans,		
		ROBERT JOSHUA KING, '03
Mrs. Knupfel, the village gossip "who knows,"		
		PAUL McCLARY PAINE, '04

Miss Plymouth	Graduates of the Boston Hypercultural Society	{	. GEORGE CARLYLE THOMAS, '05
Miss Emerson			. CHARLES HORACE CLAPP, '05
Miss Mayflower			. . . . SAMUEL SEAVER, '05
Miss Browning			. HARRY GARDNER CHAPIN, '04
Frieda . . .	German Maidens (somewhat Shy)	{	. ARTHUR FRANCIS BENNETT, '03
Minna . . .			. . . GEORGE KARL KAISER, '04
Margot . . .			. . . . SELBY HAAR, '04
Gretchen . .			. . JOHN FREDRICK DICKIE, '05
Bertha . . .			. . GEORGE GUSTAV WALD, '05
Lisa . . . .			. . OTTO WILHELM FICK, '05
Martha . . .			GEORGE MERRILL BARTLETT, '05
Olga . . . .			. . . . WILLIAM TUFTS, '05
Old Peasant Woman . . . . .			. . . . THOMAS SHAW, '05
Chinaman . .	Mechanical Figures invented by Master Mechanic and his Assistant	{	. . . ARCHIBALD GARDNER, '02
Melba . . .			. GILBERT HOWE GLEASON, '03
De Reszke .			. . . D. ALEXANDER BARY, '04
Darky . . .			. . . LEONARD SCHLEMM, '03
Clown . . .			CHARLES ROGERSON HAYNES, '04
Tyrolean . .			. . . . SELSKAR GUNN, '04
Indian . . .			. GEORGE WILLIAM PRENTISS, '05

CHORUS

Girls.—Edward Andrew Barrier, '05; Joseph Henry Brown, Jr., '05; Charles Lake Dean, '05; George Fuller, '05; William Green, '05; Albert Warren Nichols, '04; Edward Mason Read, Jr., '05; Leigh Adair Thompson, '05.

Men.—Chester Allen, '05; Francis John Chesterman, '05; Edward May Coffin, '05; Robert Douglas Farrington, '05; Henry Michael Flinn, '05; Albert Champion Gilbert, '05; Fredrich Waters Horton, '04; Leon Karl Laney, '05; Ben Clayton Mooers, '04; Frederick Parsons Pool, '05; Fremont Nelson Turgeon, '04; Edward Oscar Welch, '05; Ralph Nims Whitcomb, '05.

SPECIAL DANCES

Doll Dance.—Frank William McConnell, '05; Edward Farnum Rockwood, '04; Oliver Porter Scudder, '03; Albert Edward Sweetser, '04.

Spanish Dance.—*Men*: Walter Matthews Butts, '05; Charles Henry Drew, '04; Louis Ezra Williams, '02. *Girls*: Alden Glover Drew, '04; Charles Ozro Egerton, '03; Harold Howard Gould, '04.

Italian Dance.—Louis John Killion, '05 ; Natt Madison Johnson, '04 ; Herbert Samuel Walker, '02 ; Francis Manning Hill, '05 ; Seymour Moses Rivitz, '05 ; Henry Warren Stevens, '04.

Harlequin and Columbine Dance.—Charles Emmet McCarthy, '02 ; William Jason Mixter, '02 ; Waldso Turner, '05 ; George Bayard Jones, '05 ; Walter Philip Regestein, '03 ; James Loockermann Taylor, Jr., '02.

Harvest and Rustic Dance.—Walter Matthews Butts, '05 ; Roswell Davis, '05 ; Harold Howard Gould, '04 ; Francis Manning Hill, '05 ; Natt Madison Johnson, '04 ; William Jason Mixter, '02 ; James Loockermann Taylor, Jr., '02 ; Waldso Turner, '05 ; Herbert Samuel Walker, '02 ; Louis Ezra Williams, '02 ; Francis Edward Drake, Jr., '05 ; Alden Glover Drew, '04 ; Charles Ozro Egerton, '03 ; Ralph Staples Gifford, '05 ; Joseph Allen Haraden, '04 ; Charles Whitney Hawkes, '05 ; George Bayard Jones, '05 ; Robert Morris Phinney, '04 ; Albert George Prescott, '05 ; Robert Wyndham Seyms, '05.

Final Ballet.—Walter Matthews Butts, '05 ; Roswell Davis, '05 ; Francis Edward Drake, Jr., '05 ; Alden Glover Drew, '04 ; Charles Henry Drew, '04 ; Charles Ozro Egerton, '03 ; Ralph Staples Gifford, '05 ; Harold Howard Gould, '04 ; Joseph Allen Haraden, '04 ; Charles Whitney Hawkes, '05 ; Francis Manning Hill, '05 ; Natt Madison Johnson, '04 ; George Bayard Jones, '05 ; Louis John Killion, '05 ; Frank William McConnell, '05 ; William Jason Mixter, '02 ; Charles Emmet McCarthy, '02 ; Robert Morris Phinney, '04 ; Albert George Prescott, '05 ; Walter Philip Regestein, '03 ; Seymour Moses Rivitz, '05 ; Edward Farnum Rockwood, '04 ; Oliver Porter Scudder, '03 ; Robert Wyndham Seyms, '05 ; Henry Warren Stevens, '04 ; Albert Edwin Sweetser, '04 ; James Loockermann Taylor, Jr., '02 ; Waldso Turner, '05 ; Herbert Samuel Walker, '02 ; Louis Ezra Williams, '02.

The performance, on the whole, was a remarkably good one, without making allowance for the fact that the performers were amateurs and college youth. The stage managing was well done, so that there were very few visible breaks in the running of the play ; the ballet dancers and the chorus had been well drilled ; and the solo and chorus singing, especially the solos of Messrs. Higgins and King and the singing of the double octet in the first act, were worthy of most comic opera companies. Like most comic operas, too, the plot was so incoherent, so obviously built around

the dancing and the singing, that it seemed almost a pity that so much talent and time should not have been expended upon something more substantial. Nevertheless, since chorus singing and dancing enlist the co-operation of a great number of students, and since one of the main objects and advantages of these "Shows" is to bring a great number of students from the different classes together, one can reconcile himself to this sacrifice of dramatic unity to serve spectacular needs. The most gratifying part of the performance was the zeal and energy with which all of the participants seemed to have entered into the work of rehearsal. Indeed, in some of the dances, energy was more conspicuous than grace. But it was refreshing, and quite characteristic of the Institute youth, to see young men with minds wholly concentrated on their task frisking about with the energy of steam-engines. As so large a proportion of the performers in "Applied Mechanics" were from the younger classes, it is confidently to be expected that the "Tech Show" of next year will be even better than the admirable performance of 1902.

The following satire on the recent visit of Prince Henry was a conspicuous decoration of the stage during the first act:—

SPECIAL TABULAR VIEW OF THE GRAND DUKE'S MOVEMENTS

Receives faculty	9-9.10
Explains his absence to H. W. T.	9.10-1
Stands at Tech lunch counter	1-1.59
Eats what he gets	1.59-2
Ten minutes' quiz with Dr. Gill	2-3.50
Village green	3.50
Gives prize	3.55
Receives ladies and poem at castle	3.58
Knupfel Inn	4.00

THE ANNUAL CONCERT

A function of Junior Week, not referred to in the previous REVIEW, was the annual spring concert of the Musical Clubs, held Tuesday evening, April 22, in Paul Revere Hall. A song on

different persons and things about the Institute was rendered by the Glee Club, and proved to be most popular. The programme was: —

1. Victory *Hayes*
GLEE CLUB
2. Creole Belles *Arr. by Lansing*
BANJO CLUB
3. Excerpts, "King Dodo" *Luders*
MANDOLIN CLUB
4. Solo *Selected*
Mr. HIGGINS
5. "Florodora" Selections *Arr. by Lansing*
BANJO CLUB
6. Cupid's Garden
MANDOLIN CLUB
7. Quartet *Selected*
Messrs. SWENSON, HIGGINS, WILSON, UPHAM
8. "Old Homestead" Polka *Glynn*
BANJO CLUB
9. Narcissus *Nevins*
MANDOLIN CLUB
10. Quintet, Operatic Medley *Arr. by F. R. C. Boyd, '01*
Messrs. BELCHER, BOYD, BENSON, WILSON, JONES
11. Knocked 'em in the Old Kent Road *Arr. by Smith*
GLEE CLUB
12. March, "Franquesa"
BANJO AND MANDOLIN CLUBS

After the concert those present were received by the matrons, Mrs. H. W. Tyler, Mrs. F. W. Chandler, Mrs. Cecil H. Peabody, Mrs. E. F. Miller, and Mrs. D. P. Bartlett. The floor was cleared for dancing, which continued until twelve o'clock.

"TECHNIQUE"

Technique, which was issued, amid much student excitement, at noon on April 24, has made a departure from its predecessors in not attempting to use the Institute colors in its binding. The

result is distinctly an advance over previous issues, and it is to be hoped that no further attempt will be made to preserve the red and gray of the Institute on the outside of this student annual. The form of *Technique* is so fixed by tradition that it is difficult for each succeeding board of editors to present any strikingly new features. The average of the 1903 *Technique*, if one can gauge so intangible a matter, is somewhat in advance of its predecessors, the volume falling short in some directions and gaining in other ways. This *Technique*, as has been the case for a number of years, fully substantiates the boast of Institute men, that they produce the most mature, workmanlike, and interesting annual of all the colleges.

THE TECH TEA

The "Tech" held its annual tea, from four to six o'clock, on the afternoon of Thursday, April 24. The Tech office and the adjoining room were decorated with flags, palms, and flowers. The office was used as the reception-room, while in the room adjoining refreshments were served. The matrons were Mrs. Pritchett, Mrs. Talbot, and Mrs. Tolman.

THE JUNIOR PROM

The Junior Prom, the most important social event of the week, was held Thursday evening, April 24, at the Hotel Somerset. The hall was prettily decorated with palms and Technology emblems; and, after the first few dances, the floor was in excellent condition. The music furnished by the Niles Orchestra was very good, and all the arrangements of the committee were satisfactory. The supper-room, with its dim lights and heavy beams, was most charming, and, together with a flight of sofa-cushioned stairs, formed a delightful retreat between the dances. The dancing began about half-past nine, and, broken by the intermission for supper, was continued until two o'clock. Supper was served shortly before midnight.

About seventy-five couples were present, most of whom came from the Junior class; although a number of Seniors and others were present.

The committee in charge of the event were F. W. Davis (chairman), H. S. Baker, W. M. Drury, G. M. Harris, L. H. Lee, C. J. McIntosh, G. B. Seyms.

The matrons were Mrs. Henry S. Pritchett, Mrs. Samuel J. Mixer, Mrs. Charles L. McIntosh, Mrs. William B. Rogers, and Mrs. George H. Seyms.

ATHLETICS

The new athletic field back of the shops appears to be a great success. There is a 75-yard straightaway, wide enough for six men, running diagonally across the field. This will be used by the sprinters and hurdlers. At one side of this there is a box of soft earth and a runway for the jumpers and pole-vaulters. On the other side there is room for the weight men to practise their events. Around the whole there is a cinder path about 160 yards in circumference, on which the distance men will do their training.

ATHLETIC ASSOCIATION

The annual election of officers for the Athletic Association was held Thursday, April 10. The following men were chosen: President, K. C. Grant, '02; vice-president, G. A. Curtis, '04; secretary, G. D. Wilson, '03; treasurer, G. B. Manson, '03; representative to the Advisory Council, H. T. Winchester, '03.

Mr. Grant, the new president, is well known as a faithful and consistent athlete, his events being the low and high hurdles and the 220. He won his T. last winter in the B. A. A. Meet, when he ran on the 'Varsity Relay Team which defeated Bowdoin. Mr. Grant will return to the Institute next year to take post-graduate work in civil engineering. The Athletic Association is fortunate in having such an able man at the head for the coming year.

Mr. Curtis is favorably known as a high jumper and pole-vaulter. He won his T. in the Worcester Meet last year, when he tied for third in the high jump.

Mr. Wilson, who is re-elected as secretary, made the Track Team last year as a hammer-thrower. He is active in literary and

musical affairs as well as athletic, being manager of the Musical Clubs and associate editor of *Technique*, 1903.

Mr. Manson, the new treasurer, is best known as a half-mile runner. He made the Track Team last year in this event.

Mr. Winchester, who was chosen to represent the association on the Advisory Council, has been prominent in athletics since he entered the Institute. He has twice been treasurer of the association, and has served in the same capacity in the New England Intercollegiate Association.

Mr. Winchester has broken the Institute records in the shot put and discus throw, the latter of which he still holds. He is an all-round athlete, moreover, having won points in the high jump and 100-yard dash.

The above officers, with Messrs. Gleason, '03 (manager), and Homer, '04 (assistant manager), and the captains of the Class Track Teams,—Pember, '02, Winchester, '03, and Crowell, '04,—will constitute the Executive Committee for the coming year.

INDOOR MEET

The Indoor Handicap Games were held in the Gymnasium on Saturday afternoon, March 29. The summary:—

RUNNING HIGH JUMP.—Won by D. B. Bary, '04 (4 in.), height, 5 ft. 6-12 in.; second, W. A. Clark, '05 (4 in.), height, 5 ft. 6 1-2 in.; third, R. D. Emerson, '05 (scratch), height, 5 ft. 5 1-2 in.

16 POUND SHOT PUT.—Won by H. T. Winchester, '03 (scratch), distance, 36 ft. 6 in.; second, B. E. Lindsly, '05 (2 ft.), distance, 35 ft. 6 in.; third, C. Lang, '04 (2 ft. 6 in.), distance, 34 ft. 6 in.

POLE VAULT.—Won by G. W. Eastman, '04 (10 in.), height, 10 ft. 1-2 in.; second, W. E. Calley, '03 (1 ft.), height, 9 ft. 11 1-2 in.; third, G. A. Curtis, '04 (scratch), height, 9 ft. 6 in.

2 MILE RUN (scratch).—Won by H. S. Baker, '03; second, S. T. Worcester, '04; third, F. B. Riley, '05.

THE ANNUAL SPRING MEET

A cloudy, rainy morning, Saturday, April 19, looked rather discouraging for good work from the athletes at Soldiers' Field; but toward noon the sun came out a few times, and, although the track was a little heavy, there was a fair attendance, and some idea could be formed as to the abilities of candidates for the Track Team.

The first event — the 100-yard dash — was run in three heats and a final. In the first, Boggs and Avery qualified; in the second, Winchester and Fuller; in the third, Crowell and Ancona. The final was won very prettily by Boggs, '04; Crowell, '04, second.

In the mile run, Baker, '03, took the lead from the first and kept it till the end. Jenkins followed pluckily, and fell over the line a close second. Pritchard, '05, was third.

In the high hurdles, good work was done by Emerson, '05, who won the final heat, with Kruse, '03, second, and Baker, '02, third.

All the points in the half-mile run were made by '03, Baker, Manson, and Hardenbergh being the winners.

The 220 sprint was another pretty event. Boggs and Avery qualified in the first heat, Crowell and Goldthwaite in the second, and the final went to Boggs, Crowell, and Goldthwaite.

The next event was the two-mile run. Sweet, '04, took the lead, and set a good, fast pace. Sweet kept his lead until the last lap, when Worcester passed him; and Riley, with a spurt, passed both, and finished a couple of yards ahead. The three were the only ones to finish.

The 220 low hurdles was a dead heat between Bary, '04, and Fuller, '05, with Magnitzky a close third.

The final event of the afternoon was the quarter-mile. It was quite one-sided, as Pember won easily by several yards, Hardenbergh and Manson coming in second and third.

Monday afternoon the field events were contested on the new track back of the shops. In the high jump, Baetjer cleared the bar at 5 ft. 7 in. in good form. Curtis just scraped over an inch and one-quarter lower, and Emerson and Schaefer tied for third.

The broad jump was won very neatly by Franklin, and Bary on his last jump secured second place. Grant was a close third.

Curtis won the pole vault with the bar at 10 ft. 3 in., bettering his previous record by 2 in. Eastman and Gannett tied for second place at 10 ft.

Winchester, '03, won easily in the discus throw and shot put, but did not equal his previous work. Lindsly, a new man from '05, took the hammer throw.

Summary

100 YARD DASH.—W. B. Boggs, '04, first; J. W. Crowell, '04, second; H. T. Winchester, '03, third. Time, 10 3-5 s.

1 MILE RUN.—H. S. Baker, '03, first; E. F. Jenkins, '04, second; P. R. Pritchard, '05, third. Time, 4 m. 56 1-5 s.

120 YARD HURDLE.—R. D. Emerson, '05, first; R. L. Kruse, '03, second; E. S. Baker, '02, third. Time, 17 2-5 s.

HALF-MILE RUN.—H. S. Baker, '03, first; G. B. Manson, '03, second; C. M. Hardenbergh, '03, third. Time, 2 m. 12 4-5 s.

220 YARD DASH.—W. B. Boggs, '04, first; J. W. Crowell, '04, second; L. F. Goldthwaite, '05, third. Time, 23 3-5 s.

220 LOW HURDLES.—D. B. Bary, '04, and L. V. Fuller, '05, tied for first; A. L. Magnitzky, '03, third. Time, 29 s.

440 YARD RUN.—W. P. R. Pember, '02, first; C. M. Hardenbergh, '03, second; S. B. Manson, '03, third. Time, 37 3-5 s.

RUNNING HIGH JUMP.—H. Baetjer, '02, first; G. A. Curtis, '04, second; R. D. Emerson, '05, and H. F. Schaefer, '05, tied for third. Height, 5 ft. 7 in.

RUNNING BROAD JUMP.—D. R. Franklin, '02, first; D. B. Bary, '04, second; K. C. Grant, '02, third. Distance, 20 ft. 2 1-4 in.

POLE VAULT.—G. A. Curtis, '04, first; G. W. Eastman and F. Gannett, '02, tied for second. Height, 10 ft. 3 in.

THROWING THE HAMMER.—B. E. Lindsly, '05, first; D. S. Wilson, '03, second; W. S. Gouinlock, '05, third. Distance, 98 ft. 6 1-2 in.

THROWING THE DISCUS.—H. T. Winchester, '03, first; L. G. Morrill, '05, second; W. S. Gouinlock, '05, third. Distance, 100 ft. 11 1-2 in.

SHOT PUT.—H. T. Winchester, '03, first; L. G. Morrill, '05, second; B. E. Lindsly, '05, third. Distance, 37 ft. 2 1-4 in.

The class championship for 1902 was won by the class of '04, the points being as follows:—

<i>Winter Meet</i>	1902	1903	1904	1905
Cross-country Run	7	14	31	20
Spring Meet	19	36	36	26
Totals to present time	26	50	67	46

TRIANGULAR MEET

On Saturday afternoon, May 10, was held the first of the series of annual athletic contests between Dartmouth, Tech, and Brown. The day was fine, though the high wind blowing made it difficult to do good work. The final score was: Dartmouth, 64½; Tech, 48; Brown, 22½.

With the first few events, Tech and Dartmouth drew ahead of Brown; and it became a close and exciting contest between the two for the championship of the meet. During the earlier part of the meet, Tech led; and it looked as if the meet were coming to us. Then Dartmouth "took a brace," and from this time until near the close of the afternoon the lead alternated between the two teams. Finally, Dartmouth, by winning the 220-yard dash and hurdles, forged so far ahead that it became impossible for Tech to catch up; and the day went to Dartmouth.

Over two thousand enthusiastic spectators were present to cheer the contestants on with yells and waving of flags. President and Mrs. Pritchett attended the contest, and appeared to enjoy the games immensely. The Tech band was present, and joined in by playing some popular piece whenever a Tech man happened to be doing well. Dartmouth men were also in evidence; and, when their team forged ahead, they enlivened the air with their jubilant yells.

Though the meet was won by Dartmouth, Tech showed herself to be no mean opponent; and, if she confines herself to this line of contests, she ought to turn out a team second to none of the smaller colleges.

The meet was a very interesting one in every respect. The dashes and hurdles were easily won by Dartmouth, while in the mile and half-mile runs Tech secured an easy victory. Brown did well in the two-mile run and bicycle race. In the field events, Tech and Dartmouth were about even, Tech winning first and second in the shot put and nearly everything in the pole vault, while Dartmouth won the hammer throw and broad jump.

In the dashes and hurdles, Smith, Neal, Edson, and Pattee, all of Dartmouth, came in easy winners. The 220-yard dash was won by Smith in $22\frac{1}{2}$ s. This is in $\frac{1}{8}$ s. of the world's record, though he had a strong wind in his favor. The half-mile and mile were splendid victories for H. S. Baker, of Tech, who lowered the Tech half-mile record from 2-6 $\frac{3}{4}$ to 2-3. The two-mile run was between Doughty of Brown, and Campbell of Dartmouth, for first place; while Hardy of Brown, and Riley of Tech, were fighting it out for third place. First place was easily won by Doughty, and Hardy came in third with Riley close after him.

In the field events, G. A. Curtis was the star point winner of the day, taking a first in the pole vault, and tying with Smith of Dartmouth for first in the high jump. Curtis established a new Tech record in the pole vault, clearing the bar at 10 ft 8 $\frac{1}{4}$ in. Eastman, also of Tech, nearly succeeded in clearing the bar at that height.

In the weights, Morrill and Winchester, both of Tech, beat Dartmouth's crack man, Newman, in the shot put; while in the hammer throw Patterson and Sandborn, of Dartmouth, took the first two places. H. T. Winchester, of Tech, won the discus by a throw of 108 ft. 6 in.

The two-mile bicycle race was won by Denico, of Brown. The time was slow, due, probably, to the high wind blowing.

The summary : —

TRACK EVENTS

100 YARD DASH.— Won by G. K. Pattee, Dartmouth; second, W. B. Boggs, Tech; third, T. P. Hubbard, Dartmouth. Time, 10 $\frac{1}{2}$ s.

1 MILE RUN.— Won by H. S. Baker, Tech ; second, Doughty, Brown ; third, Handy, Brown. Time, 4 m. 43 $\frac{3}{4}$ s.

440 YARD RUN.— Won by H. E. Smith, Dartmouth ; second, G. K. Pattee, Dartmouth ; third, W. P. R. Pember, Tech. Time, 54 4-5 s.

120 YARD HURDLES.— Won by P. P. Edson, Dartmouth ; second, R. D. Emerson, Tech ; third, R. L. Kruse, Tech. Time, 16 4-5 s.

880 YARD RUN.— Won by H. S. Baker, Tech ; second, L. R. Hill, Dartmouth ; third, Pierce, Brown. Time, 2 m. 3 s.

2 MILE RUN.— Won by Doughty, Brown ; second, C. A. Campbell, Dartmouth ; third, Handy, Brown. Time, 10 m. 35 s.

220 YARD HURDLES.— Won by R. W. Neal, Dartmouth ; second, P. P. Edson, Dartmouth ; third, R. S. Edwards, Tech. Time, 25 2-5 s.

220 YARD DASH.— Won by H. E. Smith, Dartmouth ; second, D. L. Jackson, Dartmouth ; third, W. B. Boggs, Tech. Time, 22 1-5 s.

Summary of Track Events

	Tech	Dartmouth	Brown
100-yard dash	3	6	0
1-mile run	5	0	4
440-yard run	1	8	0
120-yard hurdles	4	5	0
880-yard run	5	3	1
2-mile run	0	3	6
220-yard hurdles	1	8	0
220-yard dash	1	8	0
Totals	20	41	11

FIELD EVENTS

HIGH JUMP.— Tie between H. E. Smith, Dartmouth, and G. A. Curtis, Tech, for first place. H. Baetjer, Tech, and F. W. Greene, Brown, tie for third place. Height, 5 ft. 6 1-4 in.

HAMMER THROW.— Won by G. W. Patterson, Dartmouth ; second, H. B. Sandborn, Dartmouth ; third, B. E. Lindsly, Tech. Distance, 113 ft. 9 in.

POLE VAULT.— Won by G. A. Curtis, Tech; second, G. W. Eastman, Tech; third, tie between D. C. Colesworthy, Dartmouth, and F. Gannett, Tech. Height, 10 ft. 8 $\frac{1}{4}$ in.

SHOT PUT.— Won by L. G. Morrill, Tech; second, H. T. Winchester, Tech; third, S. E. Newman, Dartmouth. Distance, 38 ft. 3 in.

RUNNING BROAD JUMP.— Won by M. W. Bullock, Dartmouth; second, E. K. Smith, Brown; third, H. E. Smith, Dartmouth. Distance, 21 ft. 5 in.

THROWING DISCUS.— Won by H. T. Winchester, Tech; second, Ehmke, Brown; third, V. M. Place, Dartmouth. Distance, 108 ft. 4 in.

2 MILE BICYCLE.— Won by Denico, Brown; second, G. K. Terrien, Dartmouth; third, F. B. Riley, Tech. Time, 5 m. 44 s.

Summary of Field Events

	Tech	Dartmouth	Brown
High jump	4 $\frac{1}{2}$	4	$\frac{1}{2}$
Hammer throw	1	8	0
Pole vault	8 $\frac{1}{2}$	1 $\frac{1}{2}$	0
Shot put	8	1	0
Running broad jump	0	6	3
Throwing discus	5	1	3
2 mile bicycle	1	3	5
Totals	28	23 $\frac{1}{2}$	11 $\frac{1}{2}$

Total Summary

	Tech	Dartmouth	Brown
Track events	20	41	11
Field events	28	23 $\frac{1}{2}$	11 $\frac{1}{2}$
Totals	48	64 $\frac{1}{2}$	22 $\frac{1}{2}$

The Tech men, on the whole, did very creditable work, and deserve to be congratulated. The track work was not so good as it should be. The field work was fairly good, though not what it should have been in some of the events.

Here is a summary of the men who gained points for Tech: —

<i>Men</i>	<i>Points Won</i>
H. S. Baker	10
W. B. Boggs	4
W. P. R. Pember	1
R. D. Emerson	3
R. L. Kruse	1
R. S. Edwards	1
G. A. Curtis	9
H. Baetjer	$\frac{1}{2}$
B. E. Lindsly	1
F. Gannett	$\frac{1}{2}$
G. W. Eastman	3
L. G. Morrill	5
H. T. Winchester	8
F. B. Riley	1
Total	<hr/> 48

COMPETITIVE DRILL

The second competitive drill for the prize cup was held at South Armory, Friday, May 2. The cup which was offered by the class of '01 is to be finally given to the school obtaining the largest number of points in a series of four drills, and is held in the mean time by the school having the most points. At the first drill the team from St. John's Military Academy took away the cup, and now at the second the same school gained the highest honors. Besides the cup three medals are given to the three best men. The first was won by C. C. McLean, of St. John's Military Academy, the second by W. B. Twiss, of New Bedford High School, third by R. F. Emerson, Wakefield High School.

The medals were presented by President Pritchett.

The following schools sent teams of two men: St. John's Military Academy, Lowell High School, New Bedford High School, Dorchester High School, Stoneham High School, Gloucester High School, Gardner High School, Rockland Military Academy, Mitchell's Boys' School, Lynn Classical High School, Hyde Park High

School, Mount Beacon Military Academy, Fall River High School, Riverview Military Academy, Wakefield High School, Newton High School.

The schools which had men in the last group of eight were: St. John's Military Academy, Lowell High School, two men; New Bedford High School, Riverview Military Academy, Wakefield High School, Newton High School, one man.

The records to date are as follows: —

St. John's Military Academy	21	Brockton High School	3
Lowell High School	14	Newton High School	2
New Bedford High School	13	Stoneham High School	2
Wakefield High School	6	Gloucester High School	1
Dorchester High School	5	Riverview Military Academy	1
East Boston High School	4		

There was a large crowd present, not only of friends of the Tech Battalion, but also of rooters for the men competing. A very well-made programme book, with a cover designed by Kriegsman, '05, gave the full details of the evening's contest.

Order of Ceremonies and Drill

7.45 P.M.

Formation of Battalion	Adjutant EDWARD A. MEAD
Escort to the Colors, Company C	Captain WILLARD E. SIMPSON
Battalion Drill	Major FRANK S. ELLIOTT
First Competitive Prize Squad	Captain LEONARD W. CRONKHITE
Wall Scaling Squad	Corporal R. N. TURNER
Second Competitive Prize Squad	Captain H. A. WENTWORTH

GUARD MOUNT

Old Officer of the Day, Captain James N. Gladding; New Officer of the Day, Captain Edward M. Read, Jr.; Officers of New Guard: First Lieutenant Elliott Lum, First Lieutenant George W. Scott, Second Lieutenant Francis M. Hill, Old Guard Company B.

Third Competitive Prize Squad	Captain JAMES N. GLADDING
Battalion Review	Major FRANK S. ELLIOTT

REVIEWING OFFICERS

Henry S. Pritchett, President M. I. T. ; Lieutenant Homer B. Grant, U.S. Coast Artillery ; Lieutenant Winthrop Alexander, M.V.M. ; Lieutenant E. Worcester, M.V.M. ; Captain William Baird, U.S.A., Commandant.

Evening Parade and awarding of prizes.

M. I. T. Cadet Band under direction of Drum-major W. O. Tuck.

JUDGES

Lieutenant Homer B. Grant, U.S. Coast Artillery ; Lieutenant Winthrop Alexander, Adjutant Cavalry Squadron, M.V.M. ; Lieutenant E. Worcester, Battalion Adjutant, Fifth Regiment Infantry, M.V.M.

Reception Committee . . . Lieutenant Colonel JOHN S. BRIDGES, M.I.T.

The Freshman Battalion did better work than it ever has done before. Especially good was the battalion review. The wall scaling squad did some very fast work on the lower wall, but there was much delay in scaling the higher wall. Those doing guard duty did very effective work, and to them much of the praise for the smoothness of the evening's work is due. Best of all, however, was the Tech band. It consisted of twenty pieces, and was at last able to carry an intelligible air through a whole movement and do it well.

THE INSTITUTE COMMITTEE

At a recent meeting of the Institute Committee the following resolution was passed :—

Resolved, That the Institute Committee, as officially representing the entire student body, shall take full charge of the matter of having a Technology song-book compiled, and shall appoint a committee or committees to render any assistance necessary.

A special meeting of the Institute Committee was to be held the next Thursday, to consider the matter at length. Notices will then, probably, be sent out to all the alumni and students, requesting them to submit lists of their favorite songs, and also to present

words or music, particularly words adapted to popular music, for new Technology songs.

After the several songs have been selected, a competition will probably be opened for designing a cover for the book and for illustrating the several songs. In this way it is hoped to publish a model college song-book next year.

A meeting of the committee was held April 21, when it was decided that a board of six should be appointed to take entire charge of the matter of getting out the song-book, and make all necessary arrangements. A prominent member of the Institute Committee will be the chairman of this board, and each committee of ten appointed by the various classes will choose one representative to the board. There will also be one alumni member.

The Institute Committee, at its last meeting of the year, passed two important resolutions in regard to the lunch-room and in regard to wearing class numerals, as follows:—

Whereas the large number of students patronizing the lunch-room at the present time causes much crowding and delay in being served, and

Whereas this condition is caused in a measure by the presence of persons not connected with the Institute, and

Whereas the addition of next year's class will make conditions much more serious,—be it

Resolved, That we, the official representatives of the undergraduates, hereby recommend to the Faculty Committee on Lunch-room:—

1. That the use of the lunch-room be restricted to students and others connected with the Institute.

2. That an attempt be made to so systemize affairs that serving may be more quickly accomplished.

CLASS NUMERALS

Be it Resolved, That the Institute Committee, the official representatives of the undergraduate body, believing that the large distribution of class numerals which resulted from the "Fall Field Day" has greatly lowered the value of numerals, by giving them to men for a small amount of work, recommend to the Advisory Council on Athletics that, at the next field day, numerals be awarded as follows:—

1. The winning football team to receive *full* numerals.

2. The winning relay team to receive numerals with a "R. T.," signifying relay team. These letters to be added (*a*) because of the large number of men in the team, and (*b*) because the amount of work is not equal to that required for regular track numerals.

3. The winning tug-of-war team to receive numerals with a "T. W." or an intertwined piece of rope.

The Sophomores won the two games with the Freshmen at the South End grounds. The two lower classes turned out in a body to the games, and with the help of a band raised great enthusiasm. Currier Lang, of Cambridge, was captain of the victorious team, and E. G. Wood, of Arlington, of the losers.

Professor Niles's announcement at the close of his last lecture of the year that, after twenty-two years' work at the Institute, he would now take up some special work, and leave his classes to his assistants, came as a great shock and surprise to the students. The leave-taking was evidently very hard, and Professor Niles spoke especially of the great loss the non-contact with students would be to him.

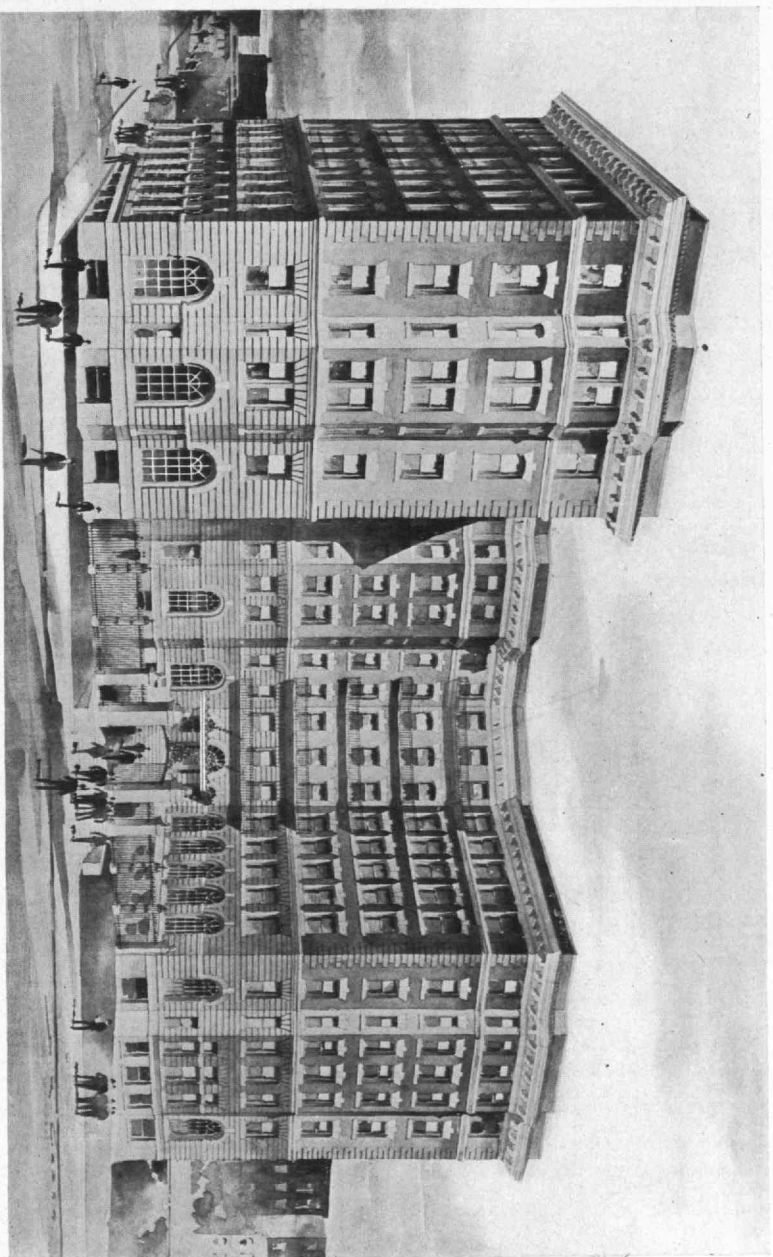
The 1904 Technique Board has been chosen as follows: editors, G. E. Atkins, J. A. Fremmer, and G. W. Eastman; society editor, L. G. Bouscaren; athletic editor, C. L. Homer; statisticians, G. H. Powell and A. J. Sweet; business managers, Bernard Blum, Ernest Harrah, W. E. Hadley. The board choose their editor-in-chief and business manager.

The annual meeting of the Mechanical Engineering Society was held March 24, 1902. New officers were elected for one year, and the following men were elected members: S. R. Bartlett, '02; P. M. Arnold, '04; R. A. Wentworth, '04; E. W. Calkins, Jr., '04; A. M. Holcombe, '04; H. W. Goddard, '04; L. G. Bouscaren, '04; W. L. Doten, '04; E. Harrah, '04; C. E. Smart, '04; E. W. Charles, '04. It was also voted that the society give a dinner which will be free to members. The arrangements are to be made by the Programme Committee. The new officers elected are as follows: president, J. F. Ancona; vice-president, J. F. Doran; secretary,

C. S. Aldrich; treasurer, W. H. Adams; Executive Committee, L. W. Adams, J. W. Aylsworth, E. J. Ruxton.

COLONEL HIGGINSON'S ADDRESS

Another one of the series of half-hour addresses to students was given Monday, April 21, in Huntington Hall, by Colonel Thomas Wentworth Higginson, the well-known author and lecturer. Colonel Higginson's subject was "People I have Met," and he spoke most entertainingly in a reminiscent and anecdotal way. His few words about Dr. Oliver Wendell Holmes, whom he mentioned first, were especially well appreciated. From Dr. Holmes the speaker turned easily to memories of boyhood days with James Russell Lowell, and then to his meeting with the poet Whittier. Long-fellow he had known as a Harvard professor. Daniel Webster he described as he had first seen him on State Street, and again when the great statesman had expressed a desire for "two more lumps of sugar in his coffee," and he (Colonel Higginson) had the honor of serving him. Simply and informally told, the speaker's reminiscences were thoroughly enjoyed and appreciated by all.



Technology Chambers — Ready for Occupancy at the beginning of the Fall Term

THE GRADUATES

ALUMNI RECEPTION, HOTEL BRUNSWICK, JUNE 6, 1902

The annual reception of the M. I. T. Alumni Association to the graduating class was attended by almost all the members of the class of 1902 and by about a hundred alumni. After refreshments, music and general conversation, informal speaking began at about nine o'clock.

Mr. Frederic H. Fay, vice-president of the M. I. T. Alumni Association, said in part:—

Members of the Class of 1902,—In the absence in Europe of the president of this Association, it is my pleasant duty, in behalf of the alumni, to welcome you to membership in our ranks.

Those of us who preceded you well know the present feelings of you who are about to graduate. We know what the fourth year's work means. Beginning with a rush greater than that of any previous year, the speed quickens, the mental pressure gauge goes higher, and, when in the second term thesis work is added to the already crowded curriculum, it seems as though the mental elastic limit had been reached, if not surpassed. How many of you have lately been wondering if you could possibly complete your theses on time! How recently you have been struggling with final examinations! And, suddenly, when the speed and pressure had reached their highest limits, all was ended. Just the other day you awoke to the realizing sense that you had nothing to do,—no lectures, no exercises of any kind, examinations over for all time, theses handed in, and—nothing to do but wait. In contrast with the previous activity the stillness seemed almost startling. Doubtless the idle suspense of the past few days has been rather trying; but I trust that by this time each of you has received that highly prized and eagerly awaited note from the secretary's office, announcing that the recipient is to get a degree next Tuesday.

After four years of struggle, pleasure, and hard work, after four of the happiest years of a young man's life, you are about to attain that for which you have been anxiously striving,—a piece of parchment. Like many of the rest of us, I doubt if some of you will know what to do with it when you get it. You may frame it, or you may put it away in some obscure place, where its existence may almost be forgotten; but you can never forget what this symbol stands for. And for one thing, by virtue of its possession, each and every one of you becomes an active member of this Alumni Association.

You realize, as well as I, that our duties and our allegiance to our Alma Mater do not end with graduation. Once Institute men, we are Institute men always. Through the Alumni Association, the local societies, the class organizations, and in many other ways, it is not only our duty, but our privilege, to "further the well-being of the Institute"; and, in doing this, we are adding to our own well-being and happiness also. We know that the friendships of youth are the truest and most lasting, and throughout all our lives we shall count among our closest friends those who have been students with us. As the years go by, we shall find increasing pleasure in our meetings with other alumni. I trust you will early form the habit of attending, whenever it is possible to do so, the meetings of your class, of the Tech societies in other cities, and those of this Alumni Association. You will find yourselves well repaid for your efforts in the pleasure thereby gained.

Members of the class of 1902, the Alumni Association is proud to welcome you to its membership. We feel that you will heartily join us in every laudable endeavor to further the well-being and add to the fame of our illustrious Alma Mater, the Massachusetts Institute of Technology.

President Henry S. Pritchett said:—

I want to echo the words of your president, and say this: I hope you do carry away with you, not only a recollection of the work and the earnestness of the institution, but that you carry away with you also a spirit of affection for it, and that you will give that

affection a chance to grow by attaching yourselves to whatsoever Tech association may be nearest to you, whether you circle in San Francisco, New Orleans, New York, Chicago, or wherever in these United States you find a Tech organization, association, or club. It has been most wonderfully helpful and pleasing to me to see how much good it does to let Tech men get together. I am sure you will find, if you go into some sort of a fraternal association or organization of Technology men nearest to you, that you will have that which will help you in your own enjoyment of life, and which will help also in refreshing memories of the life which you have had here.

My real purpose here is not to welcome the graduating class. My real office is to say something to the older alumni of what is going on in the institution to-day,— of what our plans are, something of what our work is, and something of what our hopes are. It is not always safe to talk about what you are doing or what you expect to do. There is a very prominent proverb to the effect that old men talk about the things they have done, children about the things they are doing, and fools about the things they are going to do ; and I should not wish to-night to be put into any one of these three classes. But I would like to say something about some of the things which have been going on here the past few months. You have seen in the newspaper accounts some announcements of certain changes in the matter of administrative work. For many years the Institute has had but few general officers. Outside of the Treasurer and Bursar, who attend to the necessary work of seeing that we get funds and pay funds, there have been only two officers whose administration was general,— the President and the Secretary. The Secretary has done everything except the small amount the President found time to do. Perhaps you will let me say, if I may say it with all seriousness, that there are very few men who could have done for any institution the kind of work, the variety of work, the splendid work, that our Secretary has done for the Institute this last six or seven years. We owe him a debt of gratitude which we can never pay.

More recently we have undertaken to distribute these duties, and

to have more executive officers ; and the attempt has been made to divide some of the duties along the lines which would naturally suggest themselves. This Secretary himself becomes a general officer, having charge, in a general way, of all the interior work of the institution, but being relieved of the details of registration and of recording, which are intrusted to special officers appointed for that purpose, the Registrar and the Recorder, so that the work of the institution which has to do with these technical details of writing and of exact recording may be done by men who are assigned to those duties. In addition to that we have appointed an officer who shall have for his duty the work of dealing directly with the students, who shall have office hours of convenient time and convenient place, so that the men may consult him when they will. This, I hope, may be helpful, and more particularly so to first year men, to those men who come to the institution without the knowledge which they afterwards acquire of how work is done and what the customs are. To my thinking this feature and division of the work is going to add vastly to the convenience of the student body itself. I hope they will find in the new officer, the new Dean, who will speak here himself later, a man who will not only meet them, but a man who will be glad to meet them, and who will have the time to meet them,—for nobody else has had the time. I have not had time, the Secretary has not had time : the Bursar is the only man who has had the time. His interviews have not always resulted in that spiritual exaltation desirable between the instructing staff and the students. But, seriously speaking, I hope and we all hope for this new arrangement of duties that there will come about such an order as will give students the opportunity of consulting with more leisure, with more ease, and with more directness, those who may have to deal with their work in general. I count that this new arrangement is going to be a great factor in building up in our student ranks that helpful contact with the instructing staff, and with the instructors themselves, that will make their life a more inviting one and a more hopeful one, and will give the men in the school an affection and respect for it.

In addition to that there has been made a new office, the office

of Medical Adviser, and for that has been taken an old-time Tech man,—a man who has gone through the student régime, who knows student life, and who commences with regular office hours at the Institute, when he may be consulted by any man who may have occasion to consult him, and who will sympathize with all that has to do with student life. With this subdivision of the work, I have the feeling that we shall be able in a somewhat more complete way to look out for the needs of each man, and to point him in the way he may best and most easily go, to help along that feeling of common work between students and the Faculty which can only come when there is an organization to give men duties which they can perform.

Then I wish to say a word concerning some of the new men and new work that have come to us. During the last year the Executive Committee has seen fit to divide what has been one department, the Department of Electrical Engineering and Physics; and this has been done with the help and by the advice of the man who has always conducted it with such ability and success,—Professor Cross. Under his advice and assistance we have called in an additional man,—Dr. Duncan, of New York,—who is after this year to be the head of the Department of Electrical Engineering, for which a new building is to be provided, which is to be equipped in the most complete and thorough way for instruction and service, so that by the time that equipment is in place the department will be, so far as I know, the best furnished and best equipped department of electrical engineering in the world. We have facilities which, I think, are available nowhere else; and we shall have in addition to that, through its new and active head, direct contact with the engineering side of electricity. It will be in close touch with men who are doing things in a practical way, and that is the thing which the Institute has ever sought to carry out and perfect.

There has come also to us another well-known engineer in the last three or four months, in the Department of Naval Architecture,—Captain Hovgaard, of the Danish navy. The Danish government had spent six or eight years in getting Captain Hovgaard ready for undertaking the construction of battleships for its navy; and, just

as it had prepared him to the exquisite touch of perfection, he came to us to give us the advantage of his knowledge and skill. It is one of those arrangements by which governments convey to institutions men whom it has prepared and fitted for such work.

As I speak of the men who have come, I cannot avoid a word of the men who have gone. The Corporation, at the last meeting, has conferred the title Professor Emeritus in two cases. One upon Dr. Runkle, who has been with us during the whole life of the Institute,—a man who has lived in a large way in the affections, in the hearts, and in the respect of every student, every teacher, and every officer. He has come now to that point in life where by reason of increased age the work of instruction is no longer possible for him without great labor; and so we have asked him to come to us when he could, visit us as he will, one visit in a month, or in a year, or in a week, as he may find convenient and pleasing, but to remain with us as a professor until the end of his life.

One other man has also been elected Professor Emeritus, although his life, we hope, may be for many years full of strength and full of courage,—Professor Niles. Some months ago he sent in his resignation to the authorities of the Institute, and asked to be relieved of his duties as a teacher. The Corporation in his case, out of respect for his own work and with regard for the devotion which he has always shown, elected him as well Professor Emeritus in Geology. We hope that he may find time to give us still from year to year some of his services, encouragement and advice.

To you alumni I would like to say that the Corporation and Faculty will welcome any closer effort which you may make to identify yourselves with the actual spirit and with the actual work of the school. As I have said to you frequently, we welcome not only your help, but your criticism. It is a poor day for an institution of learning when it cannot welcome and profit by honest and efficient criticism, and there is no source of criticism so likely to be honest and no source of criticism so likely to be effective as that which comes from the sons of the institution. Therefore, we shall welcome suggestions or criticisms or helpful advice in one direction or in the other; and in one respect I may speak of the action taken

this afternoon at the corporation meeting looking towards this end. A resolution was passed under which the President is authorized to appoint out of the alumni a visiting committee to co-operate with the visiting committees of the Corporation whenever the chairman may request. And that is simply a means of the Corporation to show you that we shall be glad to have your help in the inspection and criticism, and in a careful review of what the school is doing, in order to better itself and its work.

Then, in regard to the matter of athletics which has been mentioned, I think you may aid in a very useful and helpful duty. Athletics in the Institute of Technology, I am glad to say, remains yet a somewhat minor part. It does not yet dominate the life of the institution. I trust it never may; that it may always be within bounds; that it may nevertheless be wholesome and attractive, and give men that zest for exercise which improves them, and which all good men ought to have. There has been formed an advisory committee of the alumni. That committee has as yet had but limited powers. I should be most pleased if the alumni themselves, acting in any way which seemed to them wisest, may arrange a plan under which that committee may have larger powers. I should be pleased to have submitted a plan of a commission, composed of the alumni, the Faculty, and the students, to decide on the athletic exercises students may helpfully enter and what they should best leave undone, to handle such receipts as may come for such a purpose, and make determination of rewards of athletic prowess. Some such relation between the students and the alumni, both in the way of instruction and sports, is one which you can most helpfully and worthily take.

Now, in conclusion, let me say, regarding the work of the Institute as a whole, I have only the same story to say which has always been said, that the future looks hopeful; that there is every reason why the institution which commits itself to the work of technical instruction in this country should feel that it is particularly strong, and has a splendid hold on the people. That good old song which students sing in all universities, "Therefore I rejoice that I am young," every institution should sing, because every

institution is young into which comes a body of young men every year, and adds itself to it and brings out a spirit of enthusiasm and of purpose. Whatever the life of an institution may be, so far as its work and life are concerned, it is always young, and therefore full of hope. There is great satisfaction in contemplating the work of a technical school; for it, at least, knows what it intends to do. Professor Ladd, in writing of American universities, says, "There may be American universities, but no one can tell what an American university is or what it intends to do." A nice thing about a technical school is that you know what it is and what it is going to do. There is a certain satisfaction, to my thinking, in having a definiteness of end, a definiteness of purpose and of hope. And so I congratulate you to-night, not only on the fact that you are growing in numbers and strength, drawing to us new men, new influences, and new powers, not only on the fact that we are trying to keep abreast of the best men and the best teaching, but also that there is in the institution itself an aim which is definite, which is direct, which looks to a definite object, and which looks to a purpose which has a definite aim, and seeks for the accomplishment of that which is in itself vital, definite, and specific.

Mr. A. Lawrence Lowell said, in part:—

When we started in this country to build colleges, we copied. We copied simply the institutions of the Old World. We copied the institutions in the form in which they existed in England. We formed a college with buildings in which the men could live. You remember that in England not only the undergraduates, but also the fellows were not allowed to marry. They had to live among themselves. You find here and there a fellow who wanted to get married, but could not until he could get a living, until he could get some church, where he could live upon his salary, and afford to get married. The whole life was monastic. We copied that. When I was in college, an undergraduate was not allowed to be married.

Now, when we came to found a school for engineering, we started a different way. The object was to teach the men a profession, to give him instruction. When the Institute was started, we set

up a place where we should do teaching. It was started without that monastic life, and it started without traditions. Hence we started an institution which should be devoted purely to teaching, purely to instruction, and to nothing but instruction.

As a matter of fact, there was no reason why we should do otherwise. We started in a great city for a very obvious purpose. That is, we wanted the men to be brought up in contact with actual engineering work. It is essential that they should be in contact with actual work. If you had an institute of technology located one hundred miles away from any large city, you would lose half the benefit. Now, starting in a city, it was not necessary to provide a place for the men to live, to provide board and lodging. That could provide itself. Therefore, we paid no attention to the social life. The question is, whether that was not a mistake, whether it would not be a good thing to bring in to a certain degree the solidarity of life which one gets in an institution where the men live together and are more completely united, whether you can't get something out of that which you don't get as completely unless you do something of that sort.

The President has told you that you know what a technical school will do. I don't think you do, but I think he does. I think that is what he meant. He knows what a technical school can do, and what it will do. He has his mind very much on this question. He feels, as any one does who observes matters fully, that it is best to keep all the benefits we have at the Institute to-day, and yet get something more, and get something of the nature of this social life, without in the least injuring the strenuousness of intellectual life which should exist there all the time. This problem is not a perfectly simple problem. It is not a simple linear equation, for it has more than one solution. In the first place, the natural thing to do would be to copy institutions which have done something of this sort; but that is not so easy as you may suppose. It will cost a great deal to build dormitories in the style in which they are built in surrounding colleges. You can't build them in the heart of the city without great expenditures; and the Institute, as you know, has not enormous funds which could be diverted

from instruction to other things. Nevertheless, that is a question which I think we must turn our minds to, and see what we can do. There is one class of men who should know a great deal more than we do; and those are the men who are not only graduates of the institution, but who have graduated since it acquired its present size. The problem when the institution was small is a different one from what it is to-day.

I think there is one thing which the mother has the right to ask of her children, and that is, that they should bring to her all their suggestions, all their advice, and all their interest, and help her to solve the questions that are coming up, and which they alone are really able to give a fitting word of advice about.

Professor A. E. Burton said, in part:—

Those on the outside know that the Institute has grown in numbers. Those on the inside are sure that it has grown in ideas and strength, and they have absolutely no fear from these changes. I think sometimes, when growth is rapid, some are apt to think that there is danger. But there is such an earnest purpose underneath all the effort of the Institute that we who are on the inside feel perfectly safe that all these changes will be progressive.

I also want to say that there is very little danger at the Institute of Technology from too rapid changes and too radical changes. I realize from the little time that I have been at the Institute that we have a peculiarly conservative Faculty and body of students. They can be trusted, I think, as no other body of students I have ever known, to work out new problems. They really do have a great deal of respect for any one who does something. The man that comes to the Institute knows what he comes for, and he is bound to get it. No one came to the Institute, thinking it was easy. They know there is hard work, and you would all be disappointed if it were not hard enough. You would feel that you didn't really get your money's worth. So I feel that there are a great many questions which can be left to this student body that could not be left to other student bodies with the same degree of safety. I think there is one side of the Dean's duty at the Institute that will

be comparatively simple. Encouragement of athletics and social life will not be carried too far. The results will show that this encouragement has not been ill-advised. We don't want the engineer to be less a specialist. We want, of course, the engineer to be an expert engineer; but we want to be very sure that he has true manhood, which will enable him to stand and lead in the most vigorous work of the world.

Mr. Henry H. Carter, '77, said, in part :—

You have been told that it is the custom for some member of the class who graduated twenty-five years ago to speak to the class graduating at the present time. I had to do some mental arithmetic before I could convince myself that it applies to me.

Twenty-five years have seen great changes in the Institute and physical surroundings of the life of the students. In the Institute from 1873 to 1877, all instruction was carried on in one building, the present Rogers Building. The Walker Building, the Engineering and Architectural Buildings, the laboratories further out, all were unthought of, undreamed of even, then. I remember that from our rooms on the fourth floor of the Rogers Building we looked out over the only annex there was to the Institute,—a one-story drill-shed, made of cast iron or rolled iron, where most of us unwillingly went to drill about twice a week. From over this drill-shed we looked out over an unbroken expanse of sand lots on the Back Bay, broken by only a few buildings.

The student life of the Institute has undergone even more changes than the buildings or than the outlook. At one time the Institute was practically a large school where we went daily to recite, provided we could recite, or to flunk; and, when we went home, we were obliged to study all the time to prepare for the next day. Nothing in the way of sports, no football games, no tennis, no yacht club, as you have at the present time, and no mandolin club.

In closing, Mr. Harold Y. Currey responded briefly for the class of 1902.

NEWS FROM THE CLASSES

1868.

PROF. ROBERT H. RICHARDS, *Sec.*, Mass. Inst. of Technology,
Boston.

Professor Richards took his usual Summer School trip, this time to Nova Scotia and Cape Breton. He was accompanied by Charles E. Locke, class of '96, by E. E. Bugbee, class of '00, and by twenty-two students, members of the classes of '03 and '04. These summer schools are conducted to spread the good name of the Institute of Technology and for the pleasure and profit of the students. The boys studied gold mining and milling at Waverley, N.S., near Halifax; they took up coal mining at New Glasgow, N.S., and Sydney, Cape Breton, investigating the methods of coal mining, hoisting, cleaning coal, and coking; they had the concomitants of pumping and ventilating; they studied the iron blast furnaces and steel works at New Glasgow and Sydney, both of which works are smelting the ore brought there from Newfoundland; and they wound up on July 4 by watching the "Bore" come in at Truro, N.S., taking the steamer from Halifax on July 5. The Summer School is conducted on the basis of giving the students certain definite duties to do during their visits to mines and works, the assigning of a definite time for the writing up of notes, and the comparing of ideas obtained with each other and with their instructors, and a certain time for recreation and freedom from specially assigned duties when they can acquaint themselves with the places visited. This is the largest party that has ever been conducted by the Mining Department. These summer schools have been conducted, with but six omissions, since 1871, when the first great expedition was made to California, according to the plans and under the guidance of Professor Runkle.

1871.

EDWARD W. ROLLINS, *Sec.*, 19 Milk Street, Boston.

E. W. Rollins spent the winter in San Francisco. He is building a home on the Cocheco River in the city of Dover, between Dover and Portsmouth, N.H., which he expects to have completed this summer, and intends to make Dover his future residence.

1875.

E. A. W. HAMMATT, *Sec.*, 53 State Street, Boston.

At the last annual meeting it was voted to hold an informal meeting of the class in May or June at the house of Dr. S. J. Mixter, wives and families of the members to be especially invited. In accordance with the vote passed at the annual meeting of the class, as shown by the above, the informal meeting was held on Friday evening, June 13, and proved a very enjoyable occasion. The following were in attendance: George H. Eddy, Jr., Alice I. Eddy, Edgar S. Dorr, Nettie E. Dorr, Hazel E. Dorr, Dorothy P. Dorr, George Mixter, 2d, Samuel Mixter, Thomas Hibbard, Marion Hibbard, C. B. Hibbard, W. O. Crosby, Alice B. Crosby, Eoline G. Stoddard, George H. Stoddard, E. A. W. Hammatt, M. L. Hammatt, Edwin H. Lincoln, Isabelle A. Lincoln, Horace E. Stowe, Jessie B. Stowe, Barbara Stowe, Charles C. R. Fish, Ernestine Fish, William P. Robinson, William Carleton Robinson, Annie P. Vinton, Eva McAllister Pritchett, Wilhelmina G. Mixter, S. J. Mixter, William Jason Mixter, Charles G. Mixter, Mr. and Mrs. Morrill A. Smith.—Herbert Dabney is now with the Walter Baker Company, 247 Atlantic Avenue, Boston.—A new directory of the class has just been published.

1877.

RICHARD A. HALE, *Sec.*, Lawrence, Mass.

Frank C. Skinner, who wrote the recent article on the Patent Office in the *TECHNOLOGY REVIEW*, has been examiner in the

Patent Office since 1883, and a principal examiner since August, 1888. In 1898 an act of Congress was passed, reclassifying the patents and publications; and Mr. Skinner was appointed to supervise the work, which he is now carrying on with about thirty assistants to aid him.—William J. Whidden is engaged as an architect in Portland, Ore.—Arthur G. Everett is engaged on the designs and plans of the Walker Memorial Building (in connection with the Architectural Department of the Massachusetts Institute of Technology).—Isaac M. Story represents the Somerville district in the legislature this year.

1880.

PROF. GEORGE H. BARTON, *Sec.*, Mass. Inst. of Technology, Boston.

The following extracts are from a letter from William T. Miller: . . . "I am engaged in the manufacture and selling of Henry F. Miller pianos, where I have been ever since leaving the Institute. I was married in 1884, and have one child, a son, now twelve years old, who goes to Volkmann's School, and talks football and baseball much the same as his daddy did nearly twenty-five years ago. Occasionally I get a letter from our old classmate, Loring Millen; and once in a while Ed. Potter, from Chicago, stops in to see me, and tell me about the Pacific Mail Steamship Line that he is establishing to run between San Francisco and Japan. Several years ago Charlie Brown made me a short call, and gave me an interesting account of his pastorate, at that time in Connecticut. . . . A man who devotes himself to the piano business, unfortunately, has but little time for other things; but I am proud of the fact that in 1896, after a thorough study of the financial question, I left the Republican party, and am now a Democrat for life, of the William Jennings Bryan type. I have a pleasant home in the Chestnut Hill district of Brookline, and so far have been able to pay my just debts. I regret not to be able to see more of my old Institute classmates; but we were few at graduation, and apparently we have become widely separated." . . . —Edwin E. Chase, whose

address is 824 Equitable Building, Denver, Col., writes in part as follows: . . . "Most of my work now is examining mining properties, or field geology in connection with ore deposits; and I cover quite a good many degrees both of longitude and latitude, extending from British Columbia to Mexico, and west to California. I do a general business, but a great deal of it is for Eastern clients. It is very interesting work and something new to be learned, as they all have distinct and special ear-marks of their own, so that each mine examined adds to one's stock in trade and assists in deciphering the problems of the next one. To my mind there is no business like mining, as it creates new wealth in place of merely swapping dollars. I am speaking, of course, of the mines that pay. There are others that soak up money like a sponge. . . . I have a boy of my own height, who, I hope, will pass the 'exams' all right, and start in next fall at M. I. T. Have another several notches smaller." . . .

1881.

FRANK E. CAME, *Sec.*, 17 Place d'Armes Hill, Montreal, P.Q.,
Canada.

"Hans" Allen was in Boston recently, and spent quite a time at his old home in Norwood. He intends to settle down in New York as a mining and metallurgical expert.

1882.

WALTER B. SNOW, *Sec.*, Watertown, Mass.

Charles A. French's home address is now 43 Strathmore Road, Boston, Mass.—Notice has been received of the death of H. K. Blair, at one time a member of the class.—At last accounts J. H. Walker was located at Los Angeles, Cal.—The home address of Grenville Temple Snelling is now The Martinique, 56 West 33d

Street, New York, N.Y.—A. C. Brackett is at present residing at Rutland, Mass. His health has materially improved.—H. M. Neff has been recently connected with the Colorado Iron Works of Denver, Col.—Harry W. Jones has been honored by the presidency of the Minnesota Chapter of the American Institute of Architects.—At the recent convention of the American Foundrymen's Association in Boston, Arthur W. Walker was chosen president for the ensuing year.

1883.

HARVEY S. CHASE, *Sec.*, 8 Congress Street, Boston, Mass.

David Wesson is managing the refineries of the Southern Cotton Oil Company and Wesson Process Company at Savannah, Ga. The works employ about five hundred hands, and turn out a variety of products, among which are the Snow Drift lard compound, Palmatuna and Wesson Cooking Oil and Salad Oil, and various brands of soap.—Winthrop Alexander is an architect, with offices at 52 Kilby Street, Boston, and 106 Main Street, Brockton. He is adjutant of the 1st Battalion Cavalry, Massachusetts Volunteer Militia, and military instructor of the Brockton High School. He was lecturer at Tech last year on "Fireproof Building Construction."—William B. Fuller is resident engineer for the Jersey City Water Supply Company, with office at 299 Main Street, Paterson, N.J. He has charge of a masonry dam, maximum height 110 feet, total quantity of masonry about 270,000 cubic yards.—H. Ward Leonard has been busy with automobile manufacture and contests. He won two blue ribbons in the Long Island 100-mile endurance run, and also first prize for gasoline consumption. He also won a medal in the speed contests of the Automobile Club of America of March 3d.—Harvey S. Chase has been appointed to lay out a scheme for Uniform Accounting for the State of Ohio under a law recently passed.

1884.

DR. AUGUSTUS H. GILL, *Sec.*, Mass. Inst. of Technology, Boston.

Chase will spend the summer in Europe, making quite an extended tour.—Jarvis is superintendent of the Rutland Railroad, with offices at Rutland, Vt.—Lull is with the Walters Paper Company at Lockport, N.Y.—Lyle is commandant of the arsenal at Augusta, Ga. To judge from the list, his duties must be multifarious, not to say onerous, as there are no less than thirteen offices which he is supposed to fill.—Rotch delivered a lecture in Pittsburg before the Academy of Science and Art on "The New Meteorology." By invitation of the Exposition managers, he went to St. Louis to confer with Santos-Dumont in regard to the regulations for the aeronautical competition, for which \$150,000 are offered in prizes.—Among the list of candidates for degrees of the Columbian University at Washington, the secretary noted the name of William James Rich as master of patent laws. He already has the LL.M. from Georgetown University.—The following clipping from the *Washington Star* of May 27 will be of interest to those of us who remember Perin. He left after our first semi-annual examinations.

Clifford Perin, the well-known and wealthy club man of Cincinnati, Ohio, and the divorced husband of Mrs. May Clagett Perin of this city, died suddenly last evening aboard his yacht "Roamer," while the boat was lying in Curtis Bay, near Baltimore, Md., and just off the Baltimore Yacht Club-house. Mr. Perin's physician and his valet were aboard at the time. Death, which was due to paralysis of the heart, came just as Mr. Perin had been apparently in the best of spirits and an improved condition of health, and as he was about to inaugurate a pleasure trip on the boat to southern waters. Mr. Perin had been quite ill during the winter; but he had apparently much improved during the past few weeks, and looked forward to a pleasant jaunt. Mr. Perin was born in Cincinnati forty years ago, and was the son of the late Mr. Oliver Perin, a very prominent banker of Cincinnati, and a man of much wealth. The deceased was widely known in society circles in Baltimore, Cincinnati, and other places. Mr. Perin was married in Washington, D.C., to Miss May Clagett. They were later divorced. One child sur-

vives, Margaret May Perin, eight years of age. The deceased was a member of the Metropolitan Club of this city, the Queen City Club of Cincinnati, and of the Baltimore Yacht Club. He was a brother of Nelson Perin, of Baltimore, and of Frank L. Perin, of Cincinnati, both prominent business men.

—Tyler has been made head of the Department of Mathematics at the Institute.

1887.

EDWARD G. THOMAS, Sec., 4 State Street, Boston.

“’87 *did the right thing as usual*” by celebrating its fifteenth anniversary on June 27 at Misery Island off the Beverly shore. The boys assembled at Long Wharf, and started off about ten o’clock on the tug “William H. Gallison,” which served us in a similar capacity five years ago, and evidently has not been painted since. The day was fine, with a strong wind and a little sea, which once in a while induced one or two to think of conscience or some other inward pang. On the voyage, refreshments—in a keg—and the music of an Italian orchestra entertained the boys until Misery Island was reached about noon. After luncheon the first event was a baseball game between the Sears and Draper teams, umpired by our guest, one “Jimmie” Munroe, a gentleman of the necessary integrity and ability to handle high figures. As it was found that baseballs are much harder than they were in 1887, a tennis ball was used, and seven innings played, the resulting score being 12 to 11 in favor of the Sears team. It was also noticed that the distance between bases had much increased, and Whitney and Hussey had to have a sort of relay race with the ball to get around. Then there was tennis, golf, and ping-pong until dinner-time. The regular Misery Island Club dinner was served, with a broiled live lobster for every man and three for Taintor. The tug was boarded again at ten o’clock; and after midnight we landed again in Boston, well pleased with the day. The following was the roll: James P. Munroe of ’82; and, of ’87, Bryant,

Carter, Cole, Coburn, Cobb, Cooley, Cushing, Cameron, Carpenter, Draper, Davenport, Hobart, Hussey, Sears, Sprague, Spaulding, Sever, Souther, Stewart, G. W. Patterson, Very, Taintor, Young, and W. A. Whitney. The next day a dozen men met at Technology Club, and on the automobiles of Sprague, Bryant, Cameron, and Draper ran to the works of the Fore River Ship and Engine Company at Quincy Point, where Davenport showed them around. The run was then continued to the Atlantic House, Nantasket, for dinner, and back to Boston in the afternoon.—E. G. Thomas was in Chicago on the day of the reunion, and did the next best thing by dining with John Shortall.—The number of civil engineers in the navy has recently been increased by Congress, and Fred Thompson has been acting as a member of the examining board for candidates for these positions.—Frank E. Shepard was married on April 2 to Frances Rebecca Clark, of Denver.—Carney is located again at Steelton, Pa., with the Pennsylvania Steel Company.—Gamble Latrobe is still railroading, and is now located at Clayton, Del.—Dr. T. K. Bruce has moved to New York City, and can be found at 205 East 17th Street.—John W. Stearns is now engineer of maintenance of way of the W. Va., C. & P., Elkins, W. Va.—'87 men seem to prefer steam automobiles to any other sort. At least, at last accounts, the preponderance was much in their favor, since Draper, Bryant, Sprague, E. G. Thomas, Robinson, and Brett are all provided with steam machines.—Draper writes me thus regarding his recent trip abroad:—

My trip just finished included the two months' Mediterranean trip of the "Auguste-Victoria" and a similar period on shore after leaving the boat. Starting January 22 from New York, we stopped at Funchal, Madeira, where they use sleds on cobble-stone roads; then to Gibraltar, where we left to visit Granada and the Alhambra; then to Algiers; then to Genoa, Monte Carlo (a dangerous place), Nice at carnival time, and the boat again at Villefranche. We stopped at Malta on the way to Alexandria, and had a week at Cairo. Egypt really demands a longer visit. Spent four days in quarantine off Beirout, owing to plague, and then landed at Jaffa. Jerusalem, Jericho, etc., proved interesting, though the Holy City is in sad need

of an aggressive board of health. Constantinople was in a reign of terror. In fact, the outside world can hardly comprehend the situation. Athens was surprisingly modern, but the Acropolis shames modern civilization. Several stops at Sicily were interesting from various standpoints; and Naples with Pompeii, Vesuvius, etc., left very pleasant recollections. I would recommend this trip unreservedly to any one who has time for a winter vacation.

I spent several weeks in Rome, and then took in Florence, Venice, Milan, the Italian lakes, and a corner of Switzerland. I found it rather early to see the mountains. In fact, I was the first tourist to attempt two of the passes this spring, snow twenty feet deep. I sailed for home on the 23d of May, after three weeks in Paris, where it rained every day; but one does not go to Paris for weather.

I think it always makes an American proud of his own country after seeing what foreigners have to show, although the races that are gone eclipsed us in art of every kind. We are too energetic to take the time necessary to build and make things that will last, but perhaps we don't care whether they outlast our time or not.

1888.

WILLIAM G. SNOW, *Sec.*, 245 No. Broad Street, Philadelphia, Pa.

The annual class dinner was held at the Technology Club on the evening of April 9. Fourteen were present: Bates, Belser, Binney, Blanchard, Bradlee, Bridges, Buttolph, Cole, Gage, Holman, Runkle, E. M. Smith, Stone, and Webster. The B's lead it. Holman, as usual, was the long-distance man, coming down from Quebec.—C. Leonard Brown has left the engineering force of the Massachusetts Highway Commission to join that of the Boston Transit Commission.—Odin B. Roberts has formed a partnership with Oliver Mitchell and Robert Cushman, under the firm name of Roberts & Cushman, for the general practice of the law. Their offices are in the Delta Building, Post-office Square, Boston.—Collins writes from Chicago that the 26,000 horse power plant of which he has charge is practically completed. In it has just been installed the largest two-cylinder vertical compound Allis engine ever built, having a maximum capacity of 8,000 horse power, and cylinders 46" and 90" diameter, with 60" stroke. This

engine is directly connected with the heaviest double current generator yet built by the General Electric Company.—H. C. Morse has recently joined the ranks of the '88 heating and ventilating engineers, of which there are five or six. He is now with Johnson & Morris, 30 and 32 West 13th Street, New York.—The marriage of Charles A. Stone and Miss Mary Adams Leonard of Boston took place on June 3. Mr. and Mrs. Stone will reside at Rocky Point, Plymouth, Mass.

1889.

WALTER H. KILHAM, *Sec.*, 9 Park Street, Boston, Mass.

The very handsome album, entitled "A Textile at Home," lately issued by the Arlington Mills, contains a lifelike picture of Hobbs, the treasurer, in his private office.—Since the issuing of the Class Book several men, who had neglected to fill out their blanks, have written to the secretary, expressing their appreciation, regret, and other sentiments. Some of the letters and records follow: Samuel B. Sheldon, general superintendent of the Illinois Steel Company, Joliet, Ill., is a member of the Civil Engineers' Club of Cleveland, and of the A. I. Mechanical Engineers. His addresses are confined chiefly to "heart-to-heart" talks with mill men in general. He has been superintendent of melting department of the Otis Steel Company of Cleveland, and assistant general superintendent of the Illinois Steel Company, of which he is now the general superintendent. He married Miss Carrie Loftus. He writes that, after a career of more or less vicissitude, he finds himself at the head of the largest rod rolling mill in the world.—William H. Dow, 9 Dow Street, Portland, Me., has been for five years a member of Portland City government,—three years in common council, one year as president, two years in board of aldermen, one year as chairman; member of Portland Club and Harmony Lodge, I. O. O. F. He was engaged on the construction of the Canadian Pacific Railway in Maine in 1886; cashier of Evening Express Publishing Company in 1887, 1888, and 1889; was with William

Engel Company, lumber manufacturers of Bangor, during 1890, 1891, and 1892. He has been since connected with the Evening Publishing Company, and treasurer and manager of the same since May, 1900. He is treasurer of Maine Auxiliary Committee, National McKinley Memorial Association. He married Kate Turner Wade, June 16, 1897, and has one child, Katherine Maynard, born March 1, 1900.—Everett L. Stevens is teller of the Cambridge National Bank, Cambridge, Mass., and proprietor of two dry-goods stores at 1854 and 2064 Massachusetts Avenue, respectively. Was married Sept. 6, 1894, to Miss Bessie A. Rodenizer, and has one son, Donald Bartlett, born April 6, 1896. His present address is 69 Orchard Street, Cambridge, Mass.—All the members of the class will sympathize with Bixby in the loss he has sustained in the death of his wife, which occurred in November last.

1890.

GEORGE L. GILMORE, *Sec.*, Lexington, Mass.

The firm of Blood & Hale, engineers, of which John B. Blood is a member, have removed their office to 10 Post-office Square, in the new Delta Building.—John O. DeWolf, with the W. B. Smith-Whaley Company, at the meeting of the New England Cotton Manufacturers' Association in Boston, last April, read a paper on "An Electric-driven Cotton Mill" that attracted considerable attention.—The following clipping is from the *Boston Herald* of April 16:—

An elaborate set of plans for a proposed tunnel under the St. Lawrence River, between Montreal and Longueuil, has been prepared by Engineer Guy C. Emerson, of Boston, and is now on exhibition at the Canadian metropolis. Mr. Emerson is known locally as one of the engineers on the construction of the Boston subway, and later as deputy superintendent of the sewer division, and as acting superintendent of streets after that office was made vacant through the resignation of Superintendent Wheeler.

This tunnel project is said to be in the interest of the Vanderbilts and Dr. W. Seward Webb; but they are not generally known as being behind it, as the initial steps, so far as the public is aware, were taken by President H. A.

Hodge, of the Quebec Southern Railroad Company, a property that will eventually, so it is said, be under the control of the New York Central.

The plans show that the tunnel, which will be used exclusively by the railroads, begins just west of Dufferin Square, in Montreal, at a point where, rumor says, a great union station is to be erected in the near future for the use of all lines coming into the city. The bore will be twenty-seven feet wide and twenty-one feet high, and provide for a double track. The cut for the entire distance will be through solid rock, which will enhance the cost of the undertaking many hundreds of thousands of dollars.

In addition to the above, Mr. Emerson has prepared a second set of plans, which provide for another tunnel to the east of the one to be used by the railroads. This has been designed to answer the needs of a highway, and will afford sufficient space for the installation of street-car lines and walks for pedestrians.

The estimated cost of constructing both tunnels is about \$6,000,000, a portion of which will undoubtedly be assumed by the government. If the plans are accepted and the work authorized, Mr. Emerson will undoubtedly be placed in full control of the construction. This fact lends to the enterprise local interest.

1891.

CHARLES GARRISON, *Sec.*, Lexington, Mass.

The eleventh annual dinner of the class was held at the Technology Club, April 26. The following members were present: Aiken, Alley, Bradley, Bryant, J. Campbell, Conant, Dana, Dart, Daggett, Douglas, Ensworth, Fiske, Forbes, Garrison, Goodwin, A. Pierce, C. P. Wetherbee, Wilder. President Fiske presided, and the secretary read the usual reports. The date of the annual dinner was changed to the Friday previous to the last Saturday in April, so as not to conflict with some of the society dinners which fall on the last Saturday of this month. An Entertainment Committee was appointed to arrange for future dinners, so that attraction enough might be offered to gather a large number together for these reunions. The average salary of the seventeen members present was \$3,447 as against \$3,200 last year.—Lester G. French announces the birth of a daughter.—Charles Garrison will be glad

to show any one interested the DeLaval Steam Turbine, which is operating the factory of the Chase-Shawmut Company, 390 Atlantic Avenue, Boston.

1893.

FREDERIC H. FAY, *Sec.*, 60 City Hall, Boston, Mass.

The following extract is from a letter recently received from Torossian, dated at Resht, Persia, March 16, 1902: "I have been invited here for the purpose of building several small buildings for the newly established Russian Bank. As I built them at a very low price, and very quickly, in spite of rain and snow, I got a high reputation in the city, and am now busy making plans and estimates for various buildings. I am already engaged to build a villa and a house for a Mohammedan. I am also asked to undertake the building of the new Russian consulate, the successful erection of which might induce several wealthy Persian landlords to have costly residences built through me. It will greatly increase my prestige, and eventually pave my way to Teheran, the capital of Persia. Only it is a pity that my training is not up to the level of the kind of work that lies now before me. I am trying to pick up as much as I can by personal observation and by reading of architectural literature. Resht is the most important port of North Persia. It is the seat of government of Gilan, and is quite wealthy. It has a considerable amount of import and export trade, and is being slowly Europeanized. The construction of a branch road from Resht to Enzeli, or another point on the Caspian Sea, is postponed. But this branch *chaussée* is very important, and so badly needed that, sooner or later, it must be built. The new Russian road 'Enzeli-Teheran' does not begin at Enzeli, but at seven versts' distance from Resht. From Enzeli to this point, traffic is carried on in a primitive way, and to the great loss of commerce."—The following despatch from Buffalo, N.Y., appeared in the *Boston Transcript* of June 12: "W. G. Houck, of the Buffalo Structural Steel Company, sails for Europe Saturday, the object of his trip being to scour the German and European markets in search of

steel, which he cannot obtain at home. The Buffalo Structural Steel Company has contracts for a new building for a Buffalo concern, which is controlled by the Larkin Soap Company, and also for a new power house for the Larkin Works and the Buffalo Cataract Company. In order to execute these contracts on time, Mr. Houck finds it necessary to go abroad for a supply of steel which he cannot obtain in this country,—about eleven hundred tons altogether. This remarkable state of affairs is due to the extraordinary demand for American steel for building purposes, the demand being far greater than the supply.”—Herbert N. Dawes seems to have entered the vice-presidential business; for not only is he first vice-president of '93, but he is also vice-president of the Nightingale & Childs Company (incorporated), of 310 Congress Street, Boston. This corporation succeeds the S. C. Nightingale & Childs Company, dealers in magnesia and asbestos products, of which company Dawes has been for several years mechanical engineer.—Charles E. Buchholz has been appointed division engineer of the Middle Division of the New York Central & Hudson River Railroad, with headquarters at Albany, N.Y. Buchholz was formerly division engineer of the River Division of that road at Weehawken, N.J.—W. A. Clapp, lately assistant engineer of the Metropolitan Water and Sewerage Board at West Boylston, Mass., has accepted a position in the United States government service at Diamond Island, Portland, Me. Clapp is succeeded at West Boylston by Warren E. Brooks, another '93 man.—Charles F. Hopewell, city electrician of Cambridge, recently gave an illustrated lecture on “Conduit Construction and Operation” before the Harvard Electrical Club.—In the *Engineering News* of June 12, 1902, Walter W. Patch has an article upon the measurement of the flow of water in the Sudbury and Cochituate aqueducts. This article is of particular interest to the hydraulic engineer, as it deals with the effects of different degrees of cleanliness of the walls of the conduits upon the rate of flow; and he gives experimental data from which the quantity of flow can be determined by formula with greater accuracy than heretofore. Patch is assistant engineer in the Sudbury department of the

Metropolitan Water Works, and is stationed at South Framingham, Mass.—For the past year Dr. W. H. Sayward, Jr., has been a member of the Executive Committee of the Public School Association of Boston, an organization composed of the graduates of Boston's public schools, which has already accomplished some notable reforms in the *personnel* and work of the Boston School Board. Sayward is on the medical staff of the Boston Home for Incurables, and is assistant physician to children at the Tremont Dispensary. His address is 26 Bird Street, Dorchester, Mass.—Frederick Hoppin Howland is the author of a volume entitled "The Chase of DeWet," published in 1901. It will be remembered that the year before he served with the British forces in South Africa as correspondent of the London *Daily Mail* and Providence *Journal*.—Clarence Dyer Gilchrist, who served as expert attaché of the United States Commission to the Paris Exposition of 1900, is at present in charge for the national government of river improvements upon the Congaree River, South Carolina.—Frank L. Connable, who was with the class during the Freshman year, is now president of the Chattanooga Pole Company of Chattanooga, Tenn.—Richard E. Meserve was married Dec. 26, 1901, to Miss L. Eudora Price. They are living at Grand Junction, Col., where Meserve is practising his profession of architecture.—Archibald Murray, lately a teacher in Morristown, N.J., is now teacher of physics in Smith Academy, St. Louis, Mo.—Leighton Calkins is the junior member of the law firm of Bard & Calkins, 25 Broad Street, New York City.—Not long ago J. C. Hawley delivered an address before the New York Photographic Society upon "Photography with Emulsions." It will be remembered that Hawley was formerly chemist for the Eastman Kodak Company of Rochester, N.Y.

1895.

GEORGE W. HAYDEN, *Sec.*, 493 Warren Street, Roxbury, Mass.

G. H. Matthes writes "that his brother, F. E. Matthes, was recently selected to commence a topographic map of the Grand Cañon

of the Colorado River in Arizona. He left for the cañon March 17, and is now (April 27) making good progress. His work covers the Grand Cañon Forest Reserve, which comprises the most beautiful section of the Grand Cañon."—The secretary, owing to a long illness, regrets that he is not able to send any more notes for publication at this time.

1896.

E. S. MANSFIELD, *Sec.*, 70 State Street, Boston, Mass.

Bradley Stoughton has gone to Columbia University as instructor in metallurgy in the School of Mines, under Professor Henry M. Howe.—F. H. Davis has left the Ordnance Department of the United States government, and has lately associated himself with the Midvale Steel Company, Pennsylvania, where he is engaged in expert work along metallographical lines.—The engagement of H. A. Sherman to Miss Wight, of Jamaica Plain, has been announced.—James M. Driscoll is at present engaged in surveying in Cuban waters.—Joseph H. Knight has given up his office in Boston, and has gone to Honolulu to enter the employ of Holmes & Stanley, a resident law firm which required the services of a man thoroughly familiar with American law.—J. A. Rockwell, M.D., has given up his Boston office on Boylston Street, and has taken up his residence at 26 Garden Street, Cambridge, having associated himself with Dr. Walter Wesselhoeft, during whose extended absence in Europe Dr. Rockwell has taken entire charge of his practice.—L. L. Lam-born is in town for a short stay.—C. E. Locke left Boston Saturday noon, June 14, with Professor Richards and a party of about twenty, to visit the gold mines near Halifax, the coal mines, iron-blast furnace and steel works near New Glasgow, the coal mines near Sydney, and the large steel company in process of construction. The summer school was absent about three weeks.—J. H. Manahan has left the Cincinnati Gas and Electric Company, and has accepted a position with the American Stoker Company as designing and constructing engineer. At present he is engaged in a prospecting tour through Mexico.—Ruckgaber has

left the Brooklyn Rapid Transit, and is engaged in work on the subway in New York.—Wayne & Tilley, of the engineering department of the New York Telephone Company, are engaged in plans for the increase of the telephone facilities for the city to almost double its present capacity.—Putnam, assistant general manager of the Clark Automatic Telephone Company, Providence, R.I., is very frequently seen in Boston on business.—On the 8th of April, St. John's Military School at Manlius, N.Y., was completely destroyed by fire. W. L. Root was instructor in mathematics in this school until the present year, when he left to accept a position in the high school at Newark, N.J.—M. O. Leighton has left Montclair, N.J., and has taken a government position in Philadelphia, where he is engaged in expert work.—William P. Anderson is the general manager of the Cincinnati Fire-proofing Company, which has the Western rights for the Ransome system of concrete fire-proofing. He has also announced his engagement to Miss Marguerite Tullidge, of Cincinnati, the wedding to take place in August.—In Part III. of the XXII. Annual Report of the United States Geological Survey is a description of the Gaines Oil Field of Pennsylvania, by Myron L. Fuller.—The following clipping is from the *Boston Globe* of June 23, 1902:—

Announcement has come from Washington that Charles A. Wentworth, of Somerville, received the highest mark in the recent competitive examinations held in that city, and would consequently be appointed a civil engineering officer in the navy.

Mr. Wentworth is a graduate of the Haverhill high school. He took his professional course at the Institute of Technology, graduating with the class of '96 as the honor man. After leaving Tech, Mr. Wentworth did work on the Boston subway, and for two and a half years was bridge engineer and chief draughtsman for the Fitchburg Railroad.

In June, 1900, he was appointed first-class architectural steel draughtsman under Commander F. O. Maxson, U.S.N., who was then civil engineering officer at the Charlestown Navy Yard. There he designed the structural steel work for the various new buildings now going up. Last November he left to accept an important position with a local bridge and steel firm.

The examination continued fifteen days, and more than one hundred candidates competed from all sections of the country.

The appointment of Mr. Wentworth will be an especial pleasure to Secretary Moody of the navy, to whom the former delivered papers when a newsboy in Haverhill.

1897.

JOHN A. COLLINS, Jr., *Sec.*, 79 Tremont Street, Lawrence, Mass.

The class dinner, held on May 24, was in a way disappointing, in that only five men were present,—an unusually small number, when one considers the men who are located in and around Boston. This year it was slightly embarrassing, because fifty per cent. of those who said they would be there failed to come. Those little things cause no end of trouble to the ones who have to arrange such affairs. Perhaps the reason for the attendance being so small was the event happening so late in the season. However, we have hopes for the future. As the replies to the class letter come in slowly, it is found that many of the men ask if they have paid their dues for last year. There has been but one assessment made since graduation, that one of a dollar made two years ago. Quite a few have not as yet paid this amount, and those men were notified to such effect in the last letter, by the enclosure of a special blue slip. Assessments are made simply to cover the expenses of annual letters and the Class Directory.—John Boyd was married on June 26 to Miss Marion Ordway Franklin, of Brighton.—T. C. Atwood is engaged as assistant engineer on filtration of Philadelphia's Water Supply, and in such capacity is working on the designs of what will be the largest filter plant in the world,—the Torresdale filter.—Kendall Fairbanks, in apologizing for not being able to go to the class dinner, writes as follows: "During the course of a deep study of the higher elevations of the earth (namely, trees), I was forced to give up and descend to the ordinary planes by means of the shortest distance,—a straight line; and as this line happened to be through the air, and there was nothing under me but a hard road, I landed thereon with a thud. I am now travelling on a pair of crutches, with a fractured ankle (not the crutches)." If this were the fall of the year, we would advise Fairbanks to buy his apples instead of

gathering them from his neighbor's trees; but, as it is spring, we can hardly account for him being so well up in the world.—Jesse W. Shuman is manager of the Minneapolis office of the Allis-Chalmers Company, a company that includes the E. P. Allis Company, Fraser & Chalmers, Gates Iron Works, and others.—O. H. Gray, now located in Des Moines, writes of a trip to San Francisco. While there, he met Goudy, and, “in response to a kind invitation to lunch with him next day, I found him in brass buttons and gold braid pacing the deck of the United States steamship ‘Bear,’ a reserve cutter doing duty along the coast as far north as Northern Alaska. Among the eight officers in the mess, four of them were Tech men, so I enjoyed myself immensely.”

1898.

C.-E. A. WINSLOW, *Sec.*, Hotel Oxford, Boston, Mass.

The secretary had the pleasure of seeing some of the '98 men in New York during the last week in May, heard all the gossip about the boys in that vicinity, and talked over plans for the quinquennial reunion of the class in 1903. It is hoped that a rousing meeting may be arranged for commencement time next year.—L. D. Gardner is about to leave the *Mail and Express*, in order to devote his whole time to the work of the Federal Automatic Machine Company, of which he is the secretary and general manager. This company, whose offices are in the Metropolitan Building, Madison Avenue, controls the patents for a penny-in-the-slot match-selling machine which promises to prove a “big thing.” Gardner is living with Morgan Barney, 1900, at 231 West 69th Street.—D. Q. Brown invited a number of '98 men to the launching of Prince Henry's yacht “Meteor” at the Shooter's Island Yards of the Townsend-Downey Shipbuilding Company. Brown is secretary of the Manufacturing Committee of the company.—G. R. Wadsworth was married, April 9, 1902, to Miss Alice M. Randie, of Albany, and is now settled in New York.—P. E. Richards was married, on June 5, to Miss Hetta M. Hervey, at

New Bedford. D. Q. Brown was one of the ushers.—I. M. Chace, Jr., is now in the general draughting-room of the New York Central Railroad in New York.—Pease is in the architectural structural iron business in Pearl Street, New York.—Neidich has patented a method for reproducing typewritten letters, which is bringing him in a large income.—A. L. Swasey and Walter Page have opened a naval architect's office in the Colonial Building, Boston.—F. B. Heathman has hung up his shingle at Dayton, Ohio.—E. F. Russ's wedding on the 3d of June was a memorable event to the many '98 men who were present. It took place at the home of the bride's parents, Mr. and Mrs. Charles R. Sherman, Grand View Avenue, Wollaston. The rooms were decorated in colors of white and green, entwined with large bunches of sweet-peas. The ceremony was performed by the Rev. A. A. Ellsworth, former pastor of the First Congregational Church of Braintree. The bride, Miss Marion Sherman, was attended by Miss Henrietta Davis, of West Newton; and the best man was Allston Sargent, '98. Other ushers were Francis Davis, Harry Russ, Percy Russ, and R. B. Harris.—Another recent wedding was that of A. L. Davis, who was married to Miss Helen S. Ludlum on the 29th of May. The ceremony was performed at St. George's Church, New York, by the Rev. Dr. Sturgis. The young couple will make their home at Pompton, N. J., where Davis is acting as superintendent of the Ludlum Steel and Spring Works.—One of the most remarkable successes which has ever fallen to the lot of young Tech graduates was the winning of the architectural competition for the new Boston Athenæum Building, by W. E. Putnam, Jr., and A. H. Cox, both of '98. The class and the Institute are proud of them. Thirty-four sets of plans were submitted to the special Committee on Design, comprising Charles A. Cummings, Thornton K. Lothrop, Charles Francis Adams, 2d, Alfred Bowditch, and J. Randolph Coolidge, Jr.; and on May 26 the plans prepared by the '98 competitors were selected by the committee and accepted by the trustees of the Athenæum. The new building will be erected on the corner of Arlington and Newbury Streets, and its general features are described on page 321.—

On June 18, Edward Sturtevant was married to Miss Theodora Van Horn, of Newport, R.I. The wedding took place in the Berkeley Memorial Chapel in Middletown, R.I., some five miles from Newport,—a chapel built in memory of Bishop Berkeley, the famous exponent of idealistic philosophy, who for a time taught the Indians of the neighborhood in a house called "Whitehall," which is still standing and in good repair. Sturtevant is the science master of St. George's School for Boys at Newport, and has made a fine record both for himself and for the Institute in effectiveness as a teacher, in popularity with the boys and influence over them, and in original observations and studies, especially of birds. He is a grandson of the venerable Bishop Clark, of Rhode Island, who, although ninety years old and very feeble, was able to be present in the chancel, and assisted Dr. McVickar, the bishop coadjutor, in the marriage of his grandson. Mr. Diman, head master of St. George's School, was the best man; and Miss Wetherbee, of Boston, was the maid of honor. The Institute was represented at the service and at the wedding breakfast, in New York, by Mrs. President Rogers, the widow of the founder, and Professor and Mrs. Sedgwick, who were paying her a visit. Sturtevant has been living as a bachelor very near Purgatory, a rocky promontory not far from St. George's School; but, by a very natural evolution (except possibly for a science master), he will live henceforward with his bride in Paradise, a beautiful village appropriately situated just beyond Purgatory.—"Again the class of '98 is called upon to mourn the loss of one of its brightest men, Sumner Moulton Milliken, of Saco, Me. This time the blow falls heavily upon Course I., in which he was one of the most faithful students. Sumner Moulton Milliken, the only child of Mr. and Mrs. Edward Milliken, was born in West Saco, Me., in 1874. He received his early education in the public schools of Saco, and graduated from Thornton Academy, Saco, Me., in 1893, at the head of his class. He took a post-graduate course at the above academy in 1894, and entered Tech with the class of '98. During his vacations he worked for the Boston & Maine Railroad as baggage-master. After graduating from Tech he accepted a position in Watertown, N.Y., as assistant to the

superintendent of engineers department of the R. W. & O. R.R. Division of the New York Central Railroad. In the early part of 1899 he was transferred to the maintenance of way department of the West Shore Division of the New York Central Railroad. In 1900 he was offered a position in the maintenance of way department of the Boston & Maine Railroad, which he accepted, making his headquarters at Lawrence, Mass. During the summer of 1901 Milliken was sent into Maine to aid the Maine Central Railroad during the strike of its track men. Here he did great service, and his work received the highest praise from the Maine Central Railroad and Boston & Maine Railroad. On the day before Thanksgiving, in 1901, Milliken was taken ill with typhoid fever, from which he never rallied. Congestion of the liver finally developed, causing his death at his home in Saco on the twelfth day of January, 1902. During his long and painful sickness he never was heard to complain. In college and at his home, Milliken's life was a noble one,—always making friends and never gaining an enemy. The writer was intimately acquainted with him, and has passed many pleasant hours in his company talking about home life and future work. His love for his home and parents was foremost in his mind. His one ambition was to attain such a position as would enable him to reward and care for them in return for what they had done for him. While he was very industrious and studious at Tech, he always had time to aid a fellow-student who was in difficulty. Every one who knew Milliken will remember his cheery nature as he appeared every morning at the Institute. His death is deeply felt by every member of the class of '98, and especially by his most intimate friends in Course I. His memory will always live." (G. W. TREAT.)

1899.

WALTER O. ADAMS, *Sec.*, 1776 Massachusetts Avenue, North
Cambridge, Mass.

It is with sorrow that we announce the death of George I. Copp, from consumption, on April 6, 1902, and we have caused the following action to be taken:—

Whereas it hath pleased Almighty God to remove from our midst our beloved friend and classmate, George I. Copp, be it

Resolved, That we, the members of the class of 1899, hereby express our deep sorrow, and extend our heartfelt sympathy to those mourning him; and be it further

Resolved, That these resolutions be sent to those mourning him, be spread on the records of the class, and be published in the TECHNOLOGY REVIEW.

For the Class,

WALTER O. ADAMS, *Secretary*.

George I. Copp was born in Rochester, N.H., on March 27, 1877. He moved to Boston in 1880, and prepared for Technology in various Boston schools. While in the Institute, he was prominent in athletic matters, especially in baseball. After graduation he entered the employ of the Vacuum Dyer Company, the Cereal Manufacturing Company, and, finally, of Mr. H. G. Barr, of Worcester with whom a prospective partnership in the machine business was pending. Mr. Copp was taken ill with malarial fever in September; and this disease lead to that of consumption, which caused his death on April 6. George Copp was one of the well-known men of '99. He was a strong man, a well-liked man, and an able man. It is with great sorrow that '99 learns of the death of one who was so dear, and promised so much.—The secretary is glad to announce that Miles Sherrill, who has been suffering somewhat from lung trouble of late, has left Switzerland, where he was recuperating, and has resumed his investigations at the Chemical Institute in Breslau, Germany. Although Miles is not entirely well at this time, his early and complete recovery is assured.—The secretary feels, in contemplating the following list, that surely '99 is growing old and settled down. On April 23, at Minneapolis, Minn., Harold Osgood Ayer was married to Miss Harriot Pillsbury. Mr. and Mrs. Ayer will live in Savannah, Ga.—Joseph E. Lewis was married on June 18, in Glastonbury, Conn., to Miss Bertha Louise Chapman. At home, after September 1, at 491 New Britain Avenue, Hartford, Conn.—Clancey M. Lewis was married to Miss Aurelia Veneta Palmer in Hong Kong, China, on May 13.—William M. Corse was married, June 4, in Detroit,

Mich., to Miss Edith Wright Bell. At home, 25 Hendrie Avenue, Detroit, July and August.—H. J. Skinner, having resigned his position in Camden, N.J., is now living at 15 Chestnut Street, Wakefield, Mass.—The secretary wishes to announce informally that, on account of duties entailed by his recent election to the managership of the Crest Manufacturing Company of Cambridge, he will, at an early date, resign the secretaryship of the class, feeling that, however good his intentions might be, the interests of the class would best be served by the appointment to the secretaryship of one who can devote the necessary time to the duties of that office.—A notable example of '99 spirit and enthusiasm was shown on Tech night at the Pops on Tuesday, June 10. Quite a band of '99 men, marshalled by H. L. Morse, were on hand to cheer the departing class of '02, and, incidentally, everything which seemed in the least cheerable. For further particulars the reader is referred to the Boston newspapers of June 11.—Arthur L. Hamilton was lately in Lawrence with his family for a two weeks' stay, and afforded many of his old friends the pleasure of seeing him again.

1900.

GEORGE EDWARD RUSSELL, *Sec.*, 25 Broad Street, New York, N.Y.

The second annual dinner and business meeting of the class occurred on Thursday evening, April 17, at the Technology Club. Notices were sent to all members of the graduate organizations, and to some seventy others who were in or about Boston. Twenty-three men gathered at the club, and enjoyed an evening of rare pleasure. The downstairs dining-hall was used instead of the large common room. Small separate tables were used instead of one large one, and proved to be a most happy idea, the occasion lacking all semblance of stiffness or formality. When the viands had been properly discussed, Mr. Perry, as chairman of the Dinner Committee, called the meeting to order, and read reports of the last meeting. There were several important items of business presented and passed upon. Three amendments to the constitution

were voted; and another, framed as a motion, it was voted to present to the class for action. The first amendment related to the officers of the class. Instead of a secretary and vice-secretary, it was voted to elect an executive committee of three to form, with the above-named officers, an executive committee of five. To Article V., which refers to the duties of the secretary, was added this clause: "The Executive Committee shall co-operate with the secretary in his duties, and have, as its special duty, the arrangements for the annual dinner and for such informal dinners as the committee may deem advisable." The third amendment was the dating of the annual dinner, to occur in April. Finally, it was voted to allow the class to vote on the question whether the Class Record should be published each three or five years. Immediately following the business meeting came the usual toasts. H. R. Stearns read from the many replies received, and added interesting remarks from his own fund of information. Simpson followed in a comic strain, and kept the tables merry with his witty jests. Fitch finished the formal toasts with a eulogy on "Our President," emphasizing President Pritchett's progressions. With the formal toasts finished, each man rose and contributed to the entertainment by relating experiences professional (and otherwise) which had occurred in his two years of graduate life. Every one present expressed the opinion that a jollier gathering of the class had never been held; and requests for a June dinner were numerous. The committee in charge of the affair were Perry, Stearns, and Westcoat.—A. B. White was in New York City some weeks ago on business, and dropped in on the writer. He is connected with the erection department of the Pennsylvania Steel Company, and was, at the time, at work on the New East River Bridge.—Recently there has appeared, from the press of the Smithsonian Institution, a very interesting and valuable work, entitled "A Bibliography of the Analytical Chemistry of Manganese, from 1785 to 1900." The author of the work is John W. Brown (with Henry P. Talbot). 1900 can now begin her boasts.—C. L. Richardson has gone to Portsmouth, N.H., for J. H. Wallace, of New York. Richardson has been with the latter for nearly two years, and will

take charge of erecting a large pulp mill at the above-mentioned place.—Russell Suter is now located at Wayland, Mass., with the Metropolitan Water and Sewerage Board.

1901.

ALBERT W. HIGGINS, *Sec.*, Saylesville, R.I.

The class was well represented at the Pops Tech night, June 10. Although there were only about twenty members of the class present, enthusiasm and class spirit were not lacking. The class yell was always in evidence, and the occasion brought back pleasant recollections of last year. Those of the class present were Appleton, Bond, Colby, Horne, Higgins, Mitchell, Montgomery, Lane, Goodrich, Proulx, Reardon, Williams, St. Clair, Monaghan, Perry, Shivers, Spear, Hodgdon, Whitman, Parrock, Thatcher, Davis, Morse, Paraschos.—Within the last month, notices have been sent to the three hundred and sixty-five members of the class, and up to date only a small percentage have been returned, so that progress on the class catalogue is necessarily slow.—Clayton Albiston is now draughtsman for the Goodyear Tire and Rubber Company, Akron, Ohio. He has also oversight of the shop.—E. C. Allen is assistant electrical engineer of the Seattle Electric Company, Seattle, Wash.—G. W. Allen is with the Charles Holmes Machine Company, South Boston.—F. K. Baxter, Jr., has been assisting his father in a river-straightening contract in Utica, N.Y.—E. B. Belcher is foreman of the annealing plant of the Fore River Ship and Engine Company.—H. T. Benson is draughtsman for the Taunton Locomotive Manufacturing Company.—F. H. Bond, Jr., is with Shepley, Rutan & Coolidge, Boston.—J. B. Briggs is draughtsman for the American Bridge Company, Pencoyd, Penn.—E. F. Brigham is engineer and chemist for the New England Confectionery Company, Fobes-Hayward Factory, Boston.—J. S. Bronson is manager of the branch office of the Cumberland Mills in Birmingham, Ala. Jack says, "This is a great country for Course III. men, and I am surprised that more of them are not

down here."—C. L. Brown is with his father, J. Merrill Brown, architect, 153 Milk Street, Boston. Brown announced his engagement to Miss Eudora E. Bassett, of Newton Centre, last May.—When last heard from, "Matt" Brush was in Omaha, Neb.—B. F. Clark, Jr., was graduated from Columbia University in June.—Reuben B. Clark has charge of lines in the mould loft of the New York Shipbuilding Company, Camden, N.J.—F. W. Coburn is assistant master mechanic of the Maryland Steel Company, Sparrow's Point, Md.—L. E. Daloz is assistant superintendent of the Daloz Dye Works.—W. W. De Berard is assistant in the engineering office of the Spring Garden Testing Station, Philadelphia, Penn.—C. H. Dennison is assistant chemist to Henry Carmichael, analytical and consulting chemist, Boston.—L. E. Dodge is with the Boston and Texas Copper Company, Archer City, Tex.—L. Du Pont is now with the Du Pont Powder Company.—M. Estabrook is with the Niles, Bement, Pond Company, New York.—W. E. Farnham is assistant in the Traffic Division, engineering department, of the American Telephone and Telegraph Company, Boston.—"Mort" Foster is travelling around the world.—Erik H. Green is in the University of Heidelberg, Germany.—E. C. Harper is draughtsman for the Riter-Conley Manufacturing Company, Pittsburg, Penn.—H. A. Hodgdon is with the Fuller & Warren Warming and Ventilating Company, Boston.—M. W. Hogle is with the repair department of the American Sheet Steel Company, Wellsville, Ohio.—"Harl" Kennedy is superintendent of traffic of the New York & Pennsylvania Telephone and Telegraph Company, Elmira, N.Y.—R. S. Loring is draughtsman for Andrew D. Woodman, Boston.—C. A. Mace is chemist for the Dominion Cotton Mills Company (Limited), Magog, Province of Quebec, Canada.—J. F. McGann is of the firm of T. F. McGann & Sons, brass-mongers, Boston.—J. F. Monaghan is assistant master mechanic of the Waltham Bleachery and Dye Works.—R. J. Montgomery is chemist for the paint works in Wellesley.—Ray Murray is now supervising the false work for the American Bridge Company.—W. J. Newlin will, in October, be Walker Instructor in Mathematics at Amherst College. At present he is with Stone &

Webster, Boston.—A. W. Payne is salesman for the E. Howard & Co. Watch Works, New York office.—F. H. Pough is manager for T. & S. C. White Company, sulphur dealers, New York City.—H. A. Putnam is with John A. Roebling's Sons Company, Trenton, N.J.—J. F. E. Reardon is now in Boston.—W. I. Sturtevant is with the Seattle Electric Company, Seattle, Wash.—F. H. Sexton is experimental chemist in the Research Laboratory of the General Electric Company's Works, Schenectady, N.Y.—Ralph Whitman is in the engineering department, City Hall, Boston.—L. B. Wilder is mine superintendent, Vernal, Utah.—H. Wesson is assistant to the engine erector, New York Shipbuilding Company, Camden, N.J.—R. E. Simonds is with the United Shoe Machine Company, Winchester, Mass.—J. C. Woodsome is assistant superintendent of the Fort Hill Chemical Company, Boston.—C. A. Whittemore is in charge of an architect's office in Scranton, Penn. Charlie expects to return to the Institute in the fall.—L. R. Thurlow is health officer of Plainfield, N.J.—R. L. Williams is with Lockwood, Green & Co., Boston.—G. P. Shute is with the Boston Rubber Company, Malden, Mass.—Allan W. Rowe is to be an instructor in Wesleyan University next fall.—A. T. Griffin is in Lawrence, Santa Clara County, Cal.—E. F. Church, Jr., is assistant to the chief engineer, Carr Engine draughting-room, William Cramp & Sons, Philadelphia, Penn.—A. C. Persons is chemist for one of the cotton-mills in Willimantic, Conn.—J. M. Hood is engaged in engineering work in Mississippi.—“Bill” Whipple is in Cinclare, La.—H. Johnson is in Honolulu, Hawaiian Islands.—The '01 men who received degrees this year are Morse, Paraschos, Mahar, Pitts, Ritchie, L. E. Williams, H. O. Cummins, Wilder, Daloz, Pearson, Thatcher, Gorfinkle, McIntyre, Pendill, R. White, Jr., F. K. Mitchell, L. W. Millar, C. E. Patch, W. M. Rice, Spear.—The following men received the degree of Master of Science: R. R. Goodrich, W. G. Holford, L. Pearse, B. E. Schlesinger, L. R. Henrich, E. F. Lawrence, J. E. Ober.—The total amount subscribed by the class for the Walker Memorial is \$5,393 by 149 subscribers.

BOOK REVIEWS

TALKS ON WRITING ENGLISH

First Series. By ARLO BATES. Crown 8vo, pp. 322. Houghton, Mifflin & Co. \$1.50.

TALKS ON WRITING ENGLISH

Second Series. By ARLO BATES. Crown 8vo, pp. 259. Houghton, Mifflin & Co., 1901. \$1.50.

The critic, when he receives for review Arlo Bates's "Talks on Writing English," looks upon the two volumes with both doubt and hope. Will they give him what he needs?

It is safe to say that the reviewer, the novelist, the worker in whatever literary field, has felt from the beginning a lack of proper instruction in his art. There is no such chance for him to learn his technique as there is for the sculptor or the painter. No written work can be comprehended at a glance. Masters in literature can give no time to instruction, as do the Parisian artists; for in reading the works of their pupils they would lose the time to write their own. The result is that instruction in English and the writing of text-books have been left to professors of composition, as distinguished from writers of practical experience. Professor Wendell has been almost the only exception to this statement. Among the treatises, tasteless and indigestible as chalk, his has vigor and freshness. But except for Professor Wendell's help the student finds his subject dull, and the graduate must teach himself. Shown by the practice of writing how much he has yet to learn, many a man has raked out his old text-books, only to lay them by. Repelled by them once, he is eager to apply himself now; yet the task is as difficult as ever. In especial, the writer of fiction must help himself. What wonder that most "first books" die still-born? There is no graduate school of expression, no *atelier* which engages to turn out a finished literary artist. Even the musician has better opportunities.

But the title of Professor Bates's book is promising. No "Principles," no "Art": merely Talks on Writing English. It is not even advertised as by a professor. When one remembers its author's training,—that he has been a journalist in the better sense, that he is now and always poet and novelist, that he comes to his title comparatively late in life,—then one takes heart. Here is a teacher who was trained by action, not by study; who has sought to bring Clearness, Force, and Elegance into his own works rather than those of others. Further, he declares his intention to be practical. Let us say at once that he makes his intention good.

In its form the book naturally follows, for a while at least, the classification set down by the wisdom of generations. Here are the old familiar topics: here are Unity, Mass, Coherence, with Exposition, Argument, Description, and Narration. No one could escape them. But who besides Mr. Bates would write the short chapter, of three paragraphs merely, on Punctuation; who else would speak to us of Originality or Letter-writing, or include in such a book the strong and manly chapter on the Literary Life? From its form, in a first and second series, the same ground is partly, not re-traversed, but surveyed again from a different point of view, so that, while the variety of treatment secures interest, principles are driven home. The critic, as he lays the book aside and proceeds mentally to examine it, envies the beginner such a guide to his first steps.

For the book is, first of all, a guide which one can trust. Its author knows whereof he writes, and he adheres throughout to his intention to be practical. His exposition of common faults is so searching that he forces an abashed self-criticism. He puts his finger on blemishes which not only the beginner, but also the seasoned writer, can recognize in his own work. His warnings against mannerisms, the vices into which any literary virtues can be pushed, are well worth heeding. Keenest and strongest is his fearless iteration of the statement that writers do not think enough.

Thorough reform in this particular would thrust many a writer out of the guild. Nevertheless, Mr. Bates encourages rather than

discourages thought. It is not too much to say, for instance, that no one who reads the book can fail to resolve to be more careful with his figures of speech. The rules given for their use (it would be as unfair to quote them as to betray a novelist's plot) fix themselves in the consciousness,—one would almost say the conscience, so strong is the sense of previous misdoings. Further, Mr. Bates's understanding of the necessity to consider the effect of every written word makes him dwell on the rights of the reader, a person far too little considered in the past. Again, his advice to choose the significant in any subject comes from the experience, not of the academist, but of the trained writer,—a difference which seems almost as the amateur to the professional. From practical experience, also, come the words upon the drudgery of writing, with its exceeding great reward, sure to be won whether the literary life be or be not "successful." And no one who has struggled with "office rules" can fail to appreciate the pungent remarks upon editors' paragraphing and printers' punctuation.

The style of the "Talks" is clear and forceful, with its illuminating remarks, its epigrams, and its occasional humorous relief. One will remember the moral of the man who was always "doing his darnedest," and the applied meaning of Lear's receipt for the making of "Crumbobblious Cutlets," while no letter-writer will forget the old woman with her three wigs. Given as they are, such illustrations are not undignified: they lighten the seriousness of one who is explaining the theory as well as the practice of his art, and they give the reader courage to rebegin a hackneyed subject. By this apt illustration, by keenness, and by sympathy is secured freshness of interest. But most valuable of all,—and here we see how truly style is the man,—Mr. Bates proves himself a real teacher by his spur to the ambition. It is much to make Participles and Gerunds fascinating, it is more to make Connectives new, it is a great service to tell the novelist more of his art than can be gathered from any other treatise; but the best feature of Mr. Bates's work, making it valuable alike to beginner and old hand, is its stimulative quality. Let a writer come to the book however jaded or discouraged, he lays it down with a deeper knowledge of his art,

a new respect and love for it, and a stronger determination to achieve mastership.

ALLEN FRENCH, '92.

PRINCIPLES OF SANITARY SCIENCE AND THE PUBLIC HEALTH

By Professor WILLIAM T. SEDGWICK. New York: The Macmillan Company, 1902. pp. 368.

To one who not only feels in his professional work the influence of the contributions to a rational science of sanitation that now issue from the biological laboratories of the Institute, but who has also in the past experienced in his own person the inspiration of close association with the head of these laboratories, Professor Sedgwick's book appeals with a twofold interest. Indeed, the work will doubtless come to be regarded by a wider circle of readers in something of the same light that it is by the writer of this notice. There is, first, the clear, orderly exposition of facts and the temperate, judicial deduction of conclusions which signalize Professor Sedgwick's own contributions to sanitary science, and which in his hands have done so much to remove sanitary science in America from the category of a collection of inconsequential anecdotes and loose inferences. The presentation of the truly scientific point of view and the steady insistence upon the difference between the firm ground of ascertained fact and the bog of unfounded speculation are not the least of the services that will be rendered to the cause of public health by the publication of the "Principles."

In the second place, one finds in the book the note of enthusiasm and of personal devotion to his subject so characteristic of the author. Even the printed page infects one with the author's abounding faith in progress, and with his unfaltering assurance that adherence to the scientific method will eventually bring success. This feeling, it is needless to say here, is the moving force in all scientific activity. To have imparted this quality to a treatise that is at the same time concise and rigorous must be regarded as a literary achievement of no inconsiderable order.

The "Principles," considered as a whole, is conceived with admirable breadth. It is divided into two parts, Part I. dealing with the general phenomena of health and disease, treated from no narrow, merely clinical standpoint, but upon a broad biological foundation, and including a thoroughly interesting exposition of the ancient and modern theories of disease, of the origin and development of the germ-theory, and of the biological significance of parasitism, vital resistance, and immunity.

Part II., while somewhat more technical and necessarily specific and detailed, will still be, for the most part, of the liveliest interest to the general reader. It opens with a careful discussion of infection and contagion, with pregnant illustrations drawn from the author's own epidemiological experience, and then proceeds to treat of the fundamental problems of public sanitation connected with these topics. Here we find a simple and practical doctrine of cleanliness, a conservative statement regarding the best methods of sewage disposal, and a particularly full and interesting consideration of the pollution of public water supplies and of water as a vehicle of infectious disease. Other topics of great importance are likewise dealt with in this section, such as the relations of ice supply to the public health, the pressing necessity for reform in the matter of milk supply, and the often unregarded dangers of infection from raw foods,—meats, oysters, fruits, vegetables, and the like. Quarantine, vaccination, disinfection, and similar topics also receive due consideration; and in each case the subject-matter is treated with a proportion and balance which are too frequently lacking in works purporting to deal with the problems of public health. Finally, in the appendix, some popular beliefs and superstitions concerning the dangers from sewer gas, from damp cellars, from atmospheric and telluric disturbances, and the probable truth about ice-cream poisoning, poisoning from spoiled foods, and the like, are plainly set forth; and the belief, if unwarranted, is pricked by a few incisive words, or, if well founded, the real and often misinterpreted situation is made clear by a dexterous phrase or an apposite illustration.

Where so much of value and importance is included, it seems, per-

haps, ungracious to wish that some other matters of sanitary concern had received at least a few words. One does, however, miss more particularly any reference whatever to the question of school hygiene, which, especially as relates to the system of inspection of school-children, is of great import to the public health, and which, so far as infection and contagion are concerned, bears directly upon the welfare of the most inflammable material in the community.

One of the most attractive of the minor features of the book is the series of apt quotations that prefaces several chapters. These phrases and excerpts are drawn from widely different sources, ranging from Cruden's "Concordance" and Burton's "Anatomy of Melancholy" to "The Origin of Species" and Flügge's "Die Mikroorganismen," and many of them are strikingly effective. Some readers will perhaps wish, however, that Professor Sedgwick had correspondingly restricted the use of quotation-marks in the text itself. Sometimes, as in the case of single words, they are needless, and sometimes they could be replaced to advantage by the author's own diction. The style of the writer himself is so pointed and vigorous — witness the admirable preface — that one is inclined to regret the intrusion of a different vocabulary and the occasional jerkiness imparted to the course of the narration by too lavish a use of quotation-marks.

Minor points of difference aside, however, there can be only one judgment as to the value, timeliness, and admirable execution of Professor Sedgwick's work. American teachers and students of sanitary science have in this book still another occasion for feeling both a professional and a personal indebtedness to the head of the biological laboratories of the Institute.

EDWIN O. JORDAN, '88.

THE PROTOZOA

The sixth volume to appear in the Columbia University Biological Series is "The Protozoa," by Gary N. Calkins, Ph.D. (S.B., M. I. T. '90). This is the first attempt in English to treat this important group of animals with some degree of completeness; and the result is a very readable and valuable contribution to zoölogical

literature, adapted both to the student and to the investigator. A short introduction, dealing particularly with an historical review of our knowledge of the group, the general system of classification, and the distinctions between the lower plants and animals, is followed by an account of the general structure and physiology of the Protozoan body. Each class is then taken up in turn, its structure and life history considered in detail, and the classification down to the principal genera given. The remaining chapters consist of an excellent summary of our present conception of sexuality in the Protozoa, the special morphology of the nucleus, and the special physiology of their animals. Errors are, of course, sure to creep into a work of this size and character; but the few we have noticed are so obvious as to require no comment. Of the many commendable features of this book one of the most striking is the illustrations, which are numerous, many of them original, and drawn with great care and skill. They are easily among the best in recent zoölogical literature. Finally, the reader is particularly impressed with the unprejudiced attitude of the author in recording facts and theories, and his careful weighing of the evidence of all investigations.

A. W. W.

ENZYMES AND THEIR APPLICATIONS

By Dr. JEAN EFFRONT. Volume I. Carbohydrates. Translation by Samuel C. Prescott, Instructor in Industrial Biology, M. I. T. New York: John Wiley & Sons, 1902. pp. 319.

The process of applying bacteriological principles and methods to a considerable group of industries should be facilitated by the appearance of Mr. Prescott's translation of Effront's well-known and valuable treatise. Since the time of Pasteur, it has been known that many operations of economic importance were dependent upon a knowledge of the principles of fermentation; but, with a few notable exceptions, the fermentation industries have not profited much by the knowledge ready to their hand. A wider dissemination of such knowledge as actually exists should lead not only to renewed investigation, but to a more intensive application of facts and prin-

ciples at present not so widely known as they should be among those most interested. It is not too much to expect that Mr. Prescott's work will be a factor in the development of industrial biology in this country.

The translation is clear, shows a good vocabulary, and reads for the most part smoothly. It is not difficult to understand why the translator should have yielded rather frequently to the temptation to translate a common French construction by "one puts," "one may conclude," etc.; but, when this somewhat awkward English expression appears as many as five times in thirteen consecutive sentences (p. 17), his readers may wish that the translator had been less faithful to the Gallicism. E. O. JORDAN, '88.

TRANSPORTATION

By Professor WILLIAM Z. RIPLEY. From the Report of the Industrial Commission. pp. 225.

That portion of the report of the Industrial Commission which relates to transportation was written by Professor Ripley, who was employed as their expert on this subject for about a year, and who was present at its important hearings on this subject, taking a leave of absence from the Institute for that purpose. Most of the literature on the railroad problem has been printed in the last fifteen or twenty years; but it will not be worth while to hunt for any single publication which touches so many features of the question as does this report. While it treats historically of the development and growth of the railroad in many directions, and touches upon the past, nevertheless its up-to-date quality is early evident in its second chapter, that on Consolidation, where a main subdivision is the consolidations from 1898 to 1900, and where, in methods of consolidation, the author gives attention to the community of interest scheme and to the Railroad Securities Company. Some note, also, is taken of the purposes of consolidation and its effect on rates, on investors, on service and operation, and on labor; and in another chapter (on Pooling) it considers the effect of consolidation on pooling legislation.

The chapter on Rates and Discriminations is naturally quite important, although not a little of it is necessarily in line with other literature: nevertheless, there is much that will not be found elsewhere. Under the subhead of Railroad Discrimination and Industrial Combinations is discussed the necessarily new subject of "the United States Steel Corporation and the Railroads." Freight rates and prices are also subjects which cannot be altogether old. The chapter on Freight Classification, although not long, is valuable. Again, Railroad Finance and Fiscal Regulation is a chapter heading under which will be found a large amount of useful material not readily available elsewhere. For instance, the subhead, the Basis of Capitalization, is discussed from the standpoint of original investment, earning capacity, cost of reproduction, combination of factors. The methods and the profits of promoters and underwriters also come in for a proper share of notice. The Position and Powers of the Interstate Commerce Commission, as a subject for a chapter, give ample opportunity again for the discussion of matters not worn threadbare.

Special investigations, such as the Anthracite Coal Problem and Lake Transportation, are taken up near the close.

The report is not unduly encumbered with tabular matter. There are a goodly number of diagrams, well arranged to show at a glance facts which Professor Ripley has wished to make plain, and which his early training in the engineering course makes it easy for him to put into excellent shape. The report, as a whole, is a very distinct addition to the literature of railroad transportation. That it is so accepted elsewhere is clearly shown by the fact that it is already used as a text-book at Columbia, Yale, and Dartmouth.

C. F. A.

PRINCIPLES OF ARCHITECTURAL PERSPECTIVE

By WILLIAM H. LAWRENCE, Associate Professor of Architecture,
M. I. T. Second edition, revised.

As stated by the author in the Introduction, this book has been prepared for use in scientific and technical schools where it is de-

sired to give a short but comprehensive course in perspective. A knowledge of the elementary principles of descriptive geometry is assumed.

In Chapters I. to IV. the perspective of lines and planes is discussed, and the general solution given, using the complete vanishing-point diagram. In Chapters V. to VIII. various principles are given on which are based the short-cut methods in common use; but these principles are derived from the general theory in the first four chapters, so that the student will understand the philosophy of the short cuts, and not use them as mere thumb rules. Chapter IX. treats of curves, shadows in perspective; and the last chapter is devoted to a discussion of the apparent distortion of curved bodies, such as the cylinder and sphere, when drawn in perspective. The plates of figures are bound together at the back of the book; and, whenever needed for clearness, red lines have been used in addition to the black. The chapter on apparent distortion is illustrated by half-tones made from photographs, which are much superior to diagrams for this purpose.

The main object of the book is to reduce the amount of note-taking incidental to a lecture course. The text is, therefore, as concise as is consistent with clearness. The book, in brief, is an exposition of the underlying principles of perspective, with the intention that the given explanation and examples be supplemented by illustrative problems of a practical nature devised by the instructor, and is a work prepared especially for the student who wishes to know *why* as well as *how* to do.

H. C. B.

THE COLONIALS. BEING A NARRATIVE OF EVENTS CHIEFLY CONNECTED WITH THE SIEGE AND EVACUATION OF THE TOWN OF BOSTON IN NEW ENGLAND.

By ALLEN FRENCH (M. I. T., 1892). New York: Doubleday, Page & Co., 1902.

It is worth while that the TECHNOLOGY REVIEW shall call attention to this book, for two reasons: first, because it is one of the few works of literature produced by Institute graduates; and, sec-

ond, because, irrespective of its authorship, it is so interesting, so well told, and so true to the period with which it deals. Historical novels are usually a poor substitute for history proper; and, while the historian may be as scholarly and as dry as Stubbs, he may also be as philosophical and as fascinating as John Fiske, so that in these modern days one need not be driven exclusively to historical novels for lack of entertaining historians. At the same time, after having laid one's foundations in Parkman, Fiske, Schouler, Rhodes, and the like, it is both pleasant and profitable to turn to a book like "The Colonials," where may be found so much of history as well as of romance, and in which the narrative is so faithful to the annals. It is impossible in a review to summarize the story or even to give any satisfactory idea of the plot and its unfolding. No one who begins the book will leave it until finished, for there is not a dull page from beginning to end.

C. F. A. C.

HISTORY OF THE PRINCE SCHOOL IN THE CITY OF BOSTON,
1872-1902.

By CHARLES-EDWARD AMORY WINSLOW, S.M. (Prince School, 1891; M. I. T., 1898). Published by the Prince School Association.

Mr. C.-E. A. Winslow has done a very painstaking work in preparing a pamphlet of thirty-six pages on the "History of the Prince School in the City of Boston, 1872-1902." With great care he has gathered together the facts relative to the founding and history of this unique public school, and has appended to it biographical notices of the teachers, together with a list of graduates. More than this Mr. Winslow has presented the matter in such good proportion and with so much facility of expression that what ordinarily would be a dry chronicle has become a very interesting narrative. Not only must the book be of great interest to the many graduates of the Prince School, but it also has value as a real contribution to the local history of education.